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ABSTRACT

The state of the art of literacy development among culturally different adult students is assessed. The report represents the first year's activities of a three-year research project to explore the acquisition of literacy among these adults at community colleges. Chapter I examines the evolutionary nature of the definitions of literacy and discusses philosophical considerations, including the goals of literacy education. Chapter II analyzes sociocultural factors including ethnicity, alienation, sociolinguistics, and cultural relativism. Chapter III discusses the implications of brain research for literacy development, especially those findings from studies on hemispheric specialization concerned with malnutrition and brain growth. Chapter IV examines cognitive considerations, such as cognitive shifts, imagery, language and thought, cognitive maintenance and life style, and comprehension. Chapter V analyzes the administrative and instructional conditions within the community college that promote student success and presents a multi-disciplinary research proposal for the study of a theory and method of literacy development. The report is appended by a review of the year's activities, a listing of proposed activities for the next two years, information on the methods to be used for data collection, and a list of references. (Author/JP)

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A Report on Theory and Method for the Study of Literacy Development in Community Colleges

An Interim Technical Report for Project NIE-400-78-0600

Submitted to

The National Institute of Education
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Washington, D.C.

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PREFACE

This report represents an interim synopsis of the state of the art of literacy development with special emphasis on the context of the culturally different adult student, program techniques, and learning milieux--all with the end in view of assisting practioners within the community college. This report has resulted from Year I activities of a research project entitled "Literacy in Development: A Multidisciplinary Field Investigation Aimed at Permeating the Reality of the Culturally Different Student's Acquisition of Literacy in the Community College Context," supported by The National Institute of Education (NIE-400-78-0600). We expect to produce an expanded, more definitive version in 1981 at the end of our three-year project.

In the meanwhile, we have examined publications on a wide array of topics highly pertinent to the task at hand: intellectual development, the role of motives and emotions in learning, sociocultural variables, the literacy tasks related to job skills, the literacy tasks related to fully conscious living, the neurological correlates of literacy acquisition, the complex field of cognition, and remediation. As these contributions--in the context of the culturally different student --are synthesized, the complexity of literacy and its development loom large! The literature in all of these areas has been evaluated in terms of theoretical formulations and weighted against the backdrop of practice from the point of view of the community college learning environment.

Chapter One introduces the literacy controversies by examining the evolutionary nature of the definition of literacy and by analyzing some philosophical considerations. The kaleidoscopic sociocultural factors are treated in Chapter Two from the point of view of ethnicity, alienation, sociolinguistics, cultural relativism, and situational difference interpretations of cognitive variabilities.

The promising merger of biology and the social sciences is portrayed in Chapter Three, a discussion of the implications of brain research for literacy development, especially those findings from studies on hemispheric specialization and results of investigations concerned with malnutrition and brain growth. With few modifications, this discussion represents a condensation of A. Gayle Hudgens' dissertation, "Hemisphericity and its Implications for the Re-design of Developmental Studies Programs," (Ph.D. Dissertation, University of Texas at Austin, 1979). The field of cognition, which bridges the gap between culture and neurological processes, is treated in Chapter Four, where the focus is on cognitive development, styles, and shifts across cultures and the life span. Also included is a look into the problem-solving and comprehension processes as elucidated by current research.

In Chapter Five special emphasis is given to the administrative conditions within the community college and the main features of the teaching/learning transaction which promote student success. Above all, the intent is to relay a sensitivity to affective outcomes of curriculum, to help practioners recognize that what they teach adult learners must be culturally relevant to avoid waste of time and effort.

In this single volume an attempt has been made to synthesize the "known" by emphasizing the personal and situational circumstances under which culturally different adults learn most effectively. The manner in which such an individual approaches learning depends on many things besides the current educational environment: his previous experience, accumulated school affect, self-concept, recent role changes, economic/political conditions, and cognitive structure. A recognition of individual differences has guided the attempt at objective discussion without excessive generalization. It is the expectation, nevertheless, that a multidisciplinary thrust will give the entire work its greatest strength. Hence, the report is concluded with a multidisciplinary research proposal reflecting this three-year project's work toward a theory and method of literacy development.

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Suanne D. Roueche   A. Gayle Hudgens

Austin, Texas
September, 1979

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Chapter I

LITERACY, GROWING CONCERNS

> We cannot afford to build two nations within the same territorial boundaries...one rich, educated...and the other, which constitutes the majority of the population, poor and illiterate.
>
> *The Common Man's Charter*
> A Declaration by students at
> Makerere University, Uganda 1970

Twenty-five years after the Supreme Court decision on school segregation intended to bridge the gap between "two nations"--one reasonably affluent and educated and the other essentially poor and illiterate, a disproportionate number of minority adults in this country in 1980 cannot read and write well enough to function adequately in society. Although one of the central dilemmas encountered by researchers studying literacy is defining what "adequate functioning in society" means, Parke's description covers the essentials:

> To be functionally literate a person should read signs, letters, the ballots in voting, employment forms, auto licenses, labels on foods in stores, catalogues, newspapers, directions, the telephone directory, medicine bottle labels and the like. He should write simple notes and letters as needed. Actually, the functionally literate person should have common of word recognition skills, be able to decode with considerable ease, and comprehend passages that involve the use of words that are commonly used in life experiences (Parke, 1970, p. 4).

To this we can add our own bias--in addition to reading and writing ability, a literate person must also be "rewardingly connected" to the social group and must also have gone beyond basic subsistence survival strategies to be considered "functioning" in the human sense of the word.

Dubbed functionally illiterate, adults who cannot understand job-related printed materials often find it impossible to get and hold a job. Some turn to welfare or to crime as a means of their survival. Outraged by this unconscionable cost to both society and the individual, Jesse Jackson aptly and eloquently expressed his feelings to the 66th Texas Legislature:

> In many parts of the nation illiteracy is high because investment is low....Education does cost and ignorance costs even more. Education does cost. If one went to any state university in this nation, The University of Texas, UCLA, LSU, any state university in this nation, on a four-year academic scholarship, it would cost less than $20,000. If one went to a penitentiary for four years, on a four-year

> penitentiary scholarship for the same four years, it would cost between $50,000 and $126,000. Education and employment cost less than ignorance and incarceration. It's a critical choice for the nation. Schools at their worst are better than jails at their best (Jackson, 1979, pp. 1023-1024).

From the larger social perspective, especially when one considers the statistics surrounding prison inmate illiteracy, Jackson's remarks ought to be taken seriously. As one student of the illiteracy phenomenon has noted, "lack of education is commonplace among most prisoners. It is estimated that approximately 98 percent of those in prison have less than a high school education. Maryland State Penitentiary reported that 70 percent of its inmates were functionally illiterate" (Cook, 1977, p. 94).

The extent of illiteracy among welfare recipients, moreover, appears to be equally problematic. In a recent study conducted among able-bodied welfare recipients in the Woodlawn area of Chicago, Dr. Denton J. Brooks discovered that only 6.6 percent of the group had not gone as far as the sixth grade. After the testing was completed, the figures revealed that 50.7 percent of the subjects were achieving at a level barely above fifth grade (reported in Cook, p. 97). Such findings point out the difficulty surrounding an attempt to define literacy. Not only does there appear to be a great deal of difference between the number of years one spends in school and one's level of achievement but the tests used to determine achievement, hence the results--for example, reading scores, have been called into question. Thus, in interpreting literacy statistics, individuals must be more critical.

Beyond the critical interpretation of statistics, however, there is the larger problem of the definition of literacy itself. And although scores of definitions can be collected, the phenomenon is complex enough that no one widely acceptable operational definition of functional literacy actually exists.

Definitions of Literacy

It is almost amusing to note that after several thousand years of written language, the debate over a definition of literacy still rages. Our literature search suggests that literacy will remain an elusive concept. At best, operational definitions will be constructed for each particular field of interest and for each sociocultural context. Nevertheless, definitions of illiteracy and literacy are abundant. They range from basic reading ability (Sticht, 1977; Weber, 1975; Fisher, 1978) to technical definitions subsuming fixation spans (Kolers and Lewis, 1972; Jacobson, 1973; Jackson and McClelland, 1975) and "feature systems" (Wickelgren, 1979) to more aesthetic, humanistic conceptualizations of "holistic literacy" (Roueche and Hudgens, forthcoming 1980; Arts, Education and Americans Panel, 1978).

The official UNESCO definition of a literate person, composed in 1962, stated that a literate person is "a person who can both read and write a short, simple statement on his everyday life" or a person who has "acquired the essential knowledge and skills which enable him to engage in all those activities in which literacy is required for effective functioning in his group and community, and his attainments in reading, writing and arithmetic make it possible for him to continue to use these skills towards his own and the community's development" (UNESCO, p. 7).

The Bureau of the Census composed this definition of illiteracy: "the inability to read and write a short, simple message in English or any other language" (reported in Peck , 1977, pp. 677-678), or the inability "to read materials considered basic in this society" (Fisher, 1978, p. 1).

Other definitions go farther. Bormuth, in his work for the Right to Read Advisory Council (1973), wrote that a literate person is one who has "acquired the essential skills and knowledge in reading, writing, and computation required for effective functioning in society, and whose attainment in such skills makes it possible for him to develop new aptitudes and to participate actively in the life of his times."

Goddard (1974) maintained that literacy

> ...embraces not only the skills of reading and writing, but the ways in which they are used to extend the individual's intellectual and emotional range (p. viii).

Furthermore, Goddard conceptualized literacy

> ...as including an ability to express oneself articulately for a variety of purposes socially, intellectually and vocationally both in speech and writing; to command a capacity to read for information, enjoyment and enrichment; and to respond sensitively and intelligently to what is said as well as to what is written (p. 21).

The Adult Performance Level Project defined literacy as "the abilities to use skills and knowledge with the functional competence needed for meeting the requirements of adult living" (Northcutt, 1975, p. 1). This study, conducted at The University of Texas between 1973 and 1975, limited its view to functional competency without considering the variable of a multicultural society or a society transiting from the "having mode" to a "being mode" (Fromm, 1976, rpt. 1979). Northcutt and his colleagues appear to have correlated performances deemed important by members of their own social class and status groupings with their own highly esteemed measures of success. That is, they may have been measuring the ability and willingness to be "a typical middle-class American."

Many citizens of America no longer consider income, job status, or education to be significant measures of success in their lives. They do not necessarily pursue these as all-consuming goals. Taxonomic categories of general knowledge are open to the same criticism. It would be naive to suggest that attempting to teach "competence" (in the sense implied by Northcutt) would be greeted with any more receptivity than any other program of idealized competence (e.g., the idea that the "literate" person has read Shakespeare). Such a perspective seeks to "improve" the overall population toward the middle-class ideal. If we have learned anything from research it must be the dramatic impact, not of information content, but of information context in successful versus failing educational environments. The metamessage of mainstream programs contains seeds of insult for a large portion of America's population, particularly minority groups and other subcultural groups.

Beyond the ability to read and write on a level necessary to deal with everyday situations (including the economic necessity of making a living), literacy (in the holistic sense) can enable an individual to become aware not only of self, but also of one's place in the larger environment (see the work of Paulo Freire, exiled Brazilian educator renowned for his literacy campaigns throughout the Third World [1973, ff.; 1978, ff.]). That is, through learning to read, one can become aware of both the social contexts that shape existence and of the possibilities for changing those contexts.

A number of scholars have reflected on an expanded definition of literacy. Some have been frightened of awakening the giant--the masses. Others, however, have accepted a more flexible notion and have come to conceive literacy as a means for liberating humankind from object status as cogs in the social machinery. Literacy is the means by which the masses can transform themselves to the productive status of self-determination.

While researchers such as Northcutt (1975) may have discounted the cultural and non-middle-class factors in the issue of literacy and while Fisher (1978) has claimed that the literacy problem has been blown out of all proportion, there is, nevertheless, growing evidence that minorities--especially those whose primary language is other than mainstream American English--face particularly difficult barriers to literacy. In the case of Native American groups, Spolsky (1970) suggests that

> ...literacy training in a second language where subjects are illiterate in the first may result in the failure of students to become literate in the second language while experiencing a marked decline in first language proficiency. This is happening to the Navajo.

As the definition of literacy has evolved from the ability simply to write one's name or to read a simple message to being able to function in a postindustrial society, the curriculum in literacy programs has shifted from the 3Rs to incorporate the development of personal coping skills and intelligent consuming competencies. The Norfolk project, for example, has had as its main purposes to "develop competencies in human relations and occupational information, retrain a technical skill, and raise the basic skill level of the individual" (Cook, p. 88). Powdermaker has stated that literacy is not just learning how to read but is concerned with "comprehending a form of reality beyond the immediate experience" (cited in Harman, 1974, p. 26). Harman (1974) views literacy as "the basic communication skill that enables the individual to extend the range of his contact well beyond his immediate environment" (p. 82). Alexander R. Luria, the late Soviet neuropsychologist, in his *Cognitive Development: Its Social and Cultural Foundations* (1976) argued that illiterate peasants in Uzbekistan grasped only their immediate environment. Once these peasants had been exposed to farm collectives and literacy programs, their mental processes shiften into a more theoretical or abstract mode enabling them to generalize beyond their immediate practical experience.

Paulo Freire has called this ability to think beyond one's immediate environment conscientaçao. For Freire, conscientaçao expresses itself in the manner in which human beings relate to external realities in order to act upon them and transform them into the instruments of their humanization (IILAM, 1974, p. ii). Without conscientaçao, men are content to exist in the world rather than participate in it for "they become mere objects of history rather than the authors of their own destinies" (Ibid., p. iii).

Thus, from this cursory look at the range of definitions of literacy, one can see that it is unsound to attempt quantitative assessments of a person's literacy level in terms of the number of years one stays in school or even in terms of a grade-level reading score based on standardized tests. Recall, for example, in the earlier discussion of Cook County Illinois welfare recipients, the lack of correlation between school grades completed and level of literacy.

To clarify this issue, Kirsch and Guthrie (1978) have suggested some preliminary distinctions worthy of consideration. Organized in a trichotomy moving from the general to the specific, conceptual labels they selected were general literacy, functional literacy, and functional competency. They felt that "it would seem prudent to use the term literacy to refer to reading and the term cognitive competency to refer to general skills in listening, reading, writing and calculating (Kirsch and Guthrie, 1978, p. 505). Affective characteristics, such as motivation, perseverance, and dependability, necessary for good performance, "should not be confused with literacy or cognitive competency" (Ibid.). In conflict with others (especially, Sticht, 1975), they determined that there appears to be a low correlation between reading levels and on-the-job performance, and that there is "essentially no relationship between these measures and supervisors' ratings of individuals performing a given job" (Ibid., p. 491). They posit that "functional literacy, therefore, should be kept distinct from functional competency....Literacy, whether general or functional, should not be used to represent skills or behaviors beyond those 'dealing' with printed materials....functional literacy refers to how well a person can read materials associated with survival activities" (Ibid., p. 491). Based on their observations, the authors recommend that further testing discriminate between general literacy, functional literacy, and functional competency.

As suggested earlier, a definition of literacy often will be dependent upon the author's field of interest. One divergent definition is that a literate person incorporates the ability "to perform both ends of the literacy schema, i.e., if he can receive and transmit through a written medium" (Harman, 1974, p. 6). Harman aptly observes that "the level of literacy accepted as functional can only be determined in the context of the particular society and culture in which literacy is utilized" (Ibid., p. 8).

Since job-related literacy demands are important in an advanced industrial society like the United States, recent government-funded research projects on adult functional literacy have tended to emphasize the nature of reading tasks rather than an individual's skill level measured by standardized but possibly culturally-biased tests (Sticht, 1975). Successful performance on reading tasks "imposed by an external agent" (Ibid., p. 4) has taken precedence over generic skills. Qualitatively measured, competencies may be equal, but performance is what counts in getting ahead, in upward social mobility, and in increasing life's options.

Whether job-related literacy skills, at one end of the spectrum, should become the primary goal of policy-directed research is a volatile question. At the other end are the educational futurists who maintain that funding resources into basic skill development makes no sense at all in a computerized world. Somewhere in between these polar views lies Freire's notion of conscientaçao. At this stage, perhaps a contemplative discussion can enlighten those concerned about policy formation for adult literacy development.

Philosophical Considerations

In the twilight years of the Twentieth Century an appropriate and timely question is, "Regardless of ethnicity, social class, cultural background, age or sex, what are the literacy demands on a fully-functioning person?" The answer to that question would entail a misty excursion into numerous disciplines. Risking oversimplification, it can be said with reasonable certainty that a fully functioning individual needs a secure economic base from which to move beyond a basic survival/subsistence level. Maslow's hierarchy of needs provides a useful model since it encompasses not only the needs for job-related skills, but also suggests implicitly that one cannot move beyond his/her immediate experience until one has satisfied those basic economic needs. Given this expanded viewpoint, then, literacy studied strictly as a job-related task-demand seems a sterile approach. If one of our goals is to enable people to go beyond their immediate experience and enlarge their scope of the world both temporally and spatially, then certainly literacy demands will go far beyond merely being able to read instructions for doing a job or for learning how to do a job.

From a macroview analysis, however, the task of literacy development is characterized by cobweb dynamics. National policy formation based on a model of human and knowledge capital growth (Freeman, 1977) promises to have a significant impact on long-run educational investment in general and literacy development in particular. The so-called enlightenment function of social research (Weiss, 1977) in a world fast becoming more dependent on electronic media than on the printed word likewise fosters beneficial possibilities. At the same time, the changed economic reality has made the economic rewards of a postsecondary education specious at best, and a number of critics are presently questioning the benefits and exposing the limitations of traditional literacy.

Erich Fromm (1976, rpt. 1978), for example, after living in Mexico for a number of years, observed that

> People who are illiterate or who write little have memories far superior to the fluently literate inhabitants of the industrialised countries. Among other facts, this suggests that literacy is by no means the blessing it is advertised to be, especially when people use it merely to read material that impoverishes their capacity to experience and to imagine (p. 41).

Fromm's observation seems to be especially true of literacy acquired through formal institutional channels. It appears that formal education, as known in the past, will have to make greater investments in efficiency and in quality of training to meet the critical demands of a rapidly changing society, demands which will entail innovative and imaginative individual social members.

Freire has provided a provocative orientation for literacy in nonformal settings and what doors it can and should open. In his reflections and interpretations upon the relevance of Paulo Freire for American adult education, London (1972) has remarked that "the crucial modern need to gain more influence and control over our lives has been frustrated by the growth of bureaucracy; the development of technicism and large-scale organizations and institutions; and accelerating gap in capital resources and income between the industrial and developing societies; and the increasing tendency to view man mechanistically as an object." Freire's vision, in London's opinion, contains a potential contribution for encouring alienated adults within U.S. society to pursue schooling and literacy (Ibid., p. 25). Through consciousness-raising efforts such Americans might become "aware of the variety of forces--economic, political, social and psychological--that are affecting their lives....The awakening of consciousness is necessary so people can not only critically analyze their world and thus attain freedom, but also become aware of their own dignity as human beings" (Ibid., p. 26).

Freire describes the basic aim of education as liberation--that is, liberation from object-status, from submergence in a morass which Freire calls the state of "primary consciousness". In this state, man is "submerged by reality and his interests center on the most vegetative aspects of his life" (IILAM, 1974, p. iii). Freire's method for raising consciousness is dialogue. Basically, dialogue is an encounter between men mediated by the world. Its purpose is the pursuit of truth; its substance is a liberating act of creation. Freire's concept of dialogue implies a humanistic, an "optimistic" view of the world: the belief that any man, if freed from fear and the "internalization" of oppression (hence the title of his most famous work, Pedagogy of the Oppressed, 1970) (if truly liberated), can add "his meaningful and unique contributions to the collective effort of all men to humanize the world" (IILAM, 1974, p. iii). Implicit in Freire's conceptualization of dialogue is equal participation--between teacher and student. His concept of "banking" in traditional education which implies that the teacher holds all the information and the student none, is a very useful concept in terms of literacy acquisition. The forces motivating dialogue and its necessary components and conditions are love, humility, and intense faith in man's vocation to realize his fullest humanity, hope, and critical thinking--not accepting the extremes of either the political left or right. Dialogue for Freire is education; "Without dialogue there is no communication and without communication there can be no true education" (Freire, 1970, p. 81).

Realistically, in order to initiate the type of consciousness-raising that Freire describes, it would be necessary to allow widespread grassroots discussion of sensitive sociopolitical and economic issues. Asher DeLeon (1978), longtime UNESCO administrator on educational issues, believes that the problems of illiteracy are more or less institutionalized sociopolitical problems. DeLeon believes that formal education, in its time-bound, place-bound context, systematically excludes the majority of people and is merely a microcosm of society at large. As such, formal schooling cannot be expected to change problems in literacy or general educational competence.

The community college may be an exception. For the one educational institution in the United States which has most remarkably demonstrated its awareness of the high price of illiteracy and its commitment to mastering literacy development has been the community college. Through its people's college philosophy, its open-door policy, and its untiring remediation efforts, the community college has outdistanced other institutions of higher education by openly dedicating itself to correcting past educational inequities.

The community college is the institution which most boldly bucks the time-bound, place-bound establishment context of formal education. At the same time, the community college enrolls the largest preponderance of minority students in all of postsecondary education. Studies in the early Seventies indicated that some 75 percent of all Spanish heritage students attending institutions of higher education were enrolled in community colleges (G. de Los Santos, 1974, p. 3). A more recent report, however, shows a 33 percent decline: 42.55 percent (A. de Los Santos, July 1978, p. 9). The percentages for blacks, Native Americans and other non-Anglo students are also significant.

Beyond the enrollment representation picture, the community college has provided a special opportunity for minorities who enter the so-called open door. The central question for the remainder of this century, however, must be open door to what? Because of especially serious problems of underpreparation, many students encounter failure. U.S. Commissioner of Education, Ernest L. Boyer, recently remarked that "education can be a broken promise, a hollow dream, if access leads to an ill-defined, poorly developed, low quality learning experience." Access to the open door then becomes a matter of "what happens to them after they arrive?" (Boyer, May 1978, p. 21). Unfortunately, many students discover the community college's "open door" is a revolving one. Attrition, costly to society and dehumanizing to the individual, ranks as one of the most troublesome problems for educational leaders in general and community college educators specifically (Roueche and Snow, 1977). Attrition at colleges nationwide now hovers around 50 percent of overall enrollment (personal communication, Dr. John E. Roueche). Zwerling (1976, p. xviii) claims the "flunk-out" rate is an alarming 75 percent. Andrew Goodrich, minority director of the American Association of Community and Junior Colleges, reported that the nationwide return rate of minority students to community colleges after one year was only one in nine. Of any single ethnic group (with the exception of Native Americans), the Spanish-speaking group has the highest dropout rate, the lowest educational level and the lowest proportionate percentage enrolled in institutions of higher education (G. de Los Santos, 1974, p. 1). Several authors, with reason, then, have called the open door promise "hypocritical", "maudlin", and "an empty pledge" (Roueche and Snow, 1977; Monroe, 1972; Palinchak, 1973; Moore, 1970).

Unconscionably low retention rates are not the only serious concern. It is also distressing that a large percentage of ill-prepared, functionally illiterate adults will not even be reached by such institutions as the community college. These combined problems have forced a growing number of colleges to develop outreach programs which bring ill-prepared students into remedial or "developmental" (the euphemism) instructional programs: "Practically every university in the nation today is making an effort to remedy the learning problems of its students" (Roueche and Snow, 1977, p. 5). And although many of these programs are comprised of students from ethnic or linguistic minorities, underpreparation is now found throughout the mainstream as well.

Such a state of affairs has prompted numerous educational leaders to question whether the community college should be investing so much time, money, and effort on basic skill development. Might it be futile? Will basic literacy skills even be necessary in the future? Literacy as we know it today (ability to read, write and compute) may be unnecessary by the Twenty-first Century, or perhaps even earlier, according to several educational futurists. Robert Theobold, in fact, shocked a number of participants at the World Future Society's First International Conference on Educational Futures in late 1978 when he remarked that literacy may not be so bright an idea anymore. Peter Wagshal, director of the University of Massachusetts' Futures Studies Program, has written that electronic media (audio, visual, and computer) are rapidly replacing print media, and hence, back-to-basics approaches fail to acknowledge this new reality. Wagshal puts it tersely:

> The 'basics', in short, have always had something to do with knowledge, communication, and maybe even wisdom, and we have always assumed that the ability to read, write and compute were necessary prerequisites for achieving those ends (Wagshal, 1978, p. 243).

The passivity of print media and the exclusivity of use by the affluent elite are two long-time flaws which will supposedly be corrected by the electronic revolution in information/communication:

> A book is inherently passive: you can ask it all the questions you want, but it simply cannot respond.... How much more would we know of Freud's thought and work if we had videotapes of his therapy sessions instead of only his books (Ibid.)?

Knowledge via electronic media will soon "be everyone's property, rather than being restricted--as it currently is--to the minority who can afford the luxury of reading and writing" (Ibid., p. 244). Wagshal suggests that if there is to be a return to the basics, there should be less emphasis on the 3Rs and more emphasis on the goals they were intended to implement: "for every indication suggests that 21st century America can be a society in which knowledge, ability, and wisdom are exceedingly widespread in a population that is substantially illiterate" (Ibid.).

Critical questions with respect to investments in literacy relate to job-related literacy demands (basic to an individual's survival needs) versus the types of literacy and basic skills required in our advanced industrial society. Other critical questions relate to non-print knowledge sources (fundamental to policy issues surrounding the future of schooling) versus equal opportunity to expand the scale of thinking which cuts across socioeconomic and ethnic divisions while maintaining pluralism (essential for maintaining a culturally democratic society).

The general decline of basic skills felt across the nation indicates we have reached the watershed for resolving these critical issues. At La Guardia Community College in Queens, New York, for example, 40 percent of incoming freshmen cannot read above the eighth grade level (Abbott, 1978). At Charles Stewart Mott Community College in Flint, Michigan, reading scores are declining and students are succeeding less, withdrawing more (Reinertsen, 1978).

Why the general decline of basic skills? While there are many interesting theories why basic skills have been declining, ranging from radiation exposure to television overdosage, we believe that there are many overlapping factors involved, not the least of which are the requisite components of educational excellence. We return to Jesse Jackson's grassroots philosophy. On excellence in education Jackson had this to say:

> ...excel really operates off of four basic principles: We must have equal educational opportunity; culturally diverse education; adequately funded; equally funded. Effort must exceed opportunity if change is to take place. Effort. Effort. Many of our children are not achieving. It is not because of their genes; it is because of their agenda. We do best what we do most.... If we spend three hours a night reading, reasoning, writing, and counting our cognitive skills will be as developed as our motor skills. That is a matter of effort. That is not genes; that is agenda. We are diverted. We have become mass media addicts (Jackson, 1979, p. 1027).

Overlapping Concerns in the Literacy Arena

The acquisition of literacy in adults, as we have suggested, is exceedingly complex. When the cultural variable is added, the complexity mushrooms. The findings of researchers studying literacy acquisition of "culturally different" adults indicate that the process involves a dynamic characterized by a multivariate reality, only part of which can be operationally measured.

Just as a single society's definition of literacy changes over time, the intrinsic value of being able to read varies from culture to culture. One constant, however, may be that reading has function and utility. It may be that the ability to read even in the Twenty-first Century will have intrinsic value from a humanistic point of view if nothing else. Literacy has spread throughout the world, in differing degrees, for very practical reasons. Often the "practicality" has been the ability to read religious writings and holy books (Goody, 1968). When no concrete payoff can be expected, such as improving soil conservation and row planting in peasant agricultural regions, however, literacy programs are probably doomed (UNESCO Press, UNDP, n.d.).

Yet, the picture is still blurred. For even when a literacy program may *seem* relevant to the participants from the perspective of the trainer, certain subgroups in a social setting may be so alienated that they *reject* the dominant system's efforts (Torrey, 1973), perhaps as a way of evening the score. Merton called this effect *anomie* (Merton, 1948). From the viewpoint of the "mental marginals" (Hoiberg, 1974a), such a rejection possesses its own utility and practicality, although the dominant element in the system undoubtedly will interpret this response as a greater "neuropsychiatric risk" (Hoiberg, 1974B, p. 534), or failure to "successfully perform some reading task imposed by an *external* agent" (Sticht, 1975b, p. 4, our italics). Rather than labeling these individuals as "mental marginals" or as "deficits", it should be more instructive and certainly more humane to consider them as capable of the required job-related skills, but alienated, nevertheless. Rejection of middle-class conformity by virtue of alienation, not lack of skills, probably comes closer to the crux of the literacy dilemma.

The unexamined assumption that job-related literacy provides sufficient incentive to motivate adult semiliterates to learn to read seems to be a dangerous pivot on which to balance the future of literacy planning and policy design. This may possibly be one of the reasons, qualitatively, literacy skills in this country have failed to be upgraded. The paradox of dual rejection makes progress all the more difficult. This is especially true when the assumption is made that semiliterate "pariahs" should *want* to assimilate into the mainstream middle class. When minorities *reject* this option, trainers and researchers imbued with Anglo middle class values often reject their charges as incapable, hopeless, and noncompetitive. This is the point where assimilation versus pluralism emerges as a policy issue in the literacy arena. Do we design programs that attempt to assimilate culturally different adults into mainstream middle class modes of existence or do we encourage cultural pluralism and humanism? Given the large-scale review of the literature to follow, it is apparent that a literacy program will most likely fail when the values of the learner are in direct conflict with the goals of the program. Cárdenas and Cárdenas (1972) have conceptualized this situation in their "Theory of Incompatabilities," wherein such conflicts manifesting themselves in various degrees of racism are most always detrimental to minority students.

In an effort to preface a state of the art literature review concerned with adult literacy development, we have hinted in this introductory chapter that literacy is a complex human phenomenon dependent on a special amalgam in the ecocultural milieu, the total system. The succeeding chapters will attempt to illustrate more vividly just how complex this entire phenomenon really is. For while the precise recipe for that special mix is not yet known, we are beginning to discover the major ingredients, even if we aren't sure of the exact proportions.

From a macroview, the larger social setting and cultural influences cast an enormous impact on the nature of literacy in any given context. The sociocultural variables, then, compose one of the major ingredients in the literacy recipe. On a microscopic level, we know that the part of literacy which requires reading and thinking requires at the same time intricate brain mechanisms to function in exceedingly special ways. Hence, the neurological correlates of literacy must also be studied if we are able to obtain a deeper understanding of literacy acquisition.

When factors such as cultural differences and electronic media's impact on mainstream society are added to the literacy recipe, traditional learning theory and Piagetian theories of cognitive development fail to explain adequately how literacy works. The newly recognized worlds of culture and neurological organization in cognition and motivation provide an opportunity for modifying mainstream learning theory, thereby increasing our understanding of the complex phenomenon of literacy.

Because the complexity of literacy acquisition mushrooms when the cultural and neurological variables are added, treatment of the literature cannot be neatly organized into discrete compartments. Instead, the following broad but related categories have been arbitrarily chosen merely for convenience in discussion, and chapter divisions will contain inherent and subtle overlappings. These categorical chapters will cover sociocultural variables, neurological correlates, cognition, and literacy acquisition--the community college case. This review of the literature on literacy development not only provides the intellectual background of cogent concepts, orientations, and empirical generalizations which inform our own research project (funded by the National Institute of Education, Grant No. NIE-78-0018), but it may ultimately inform policy by forcing a rethinking of previously comfortable, yet frequently unexamined, assumptions. It should be remembered that (1) this is a selective review of the literature, and (2) literacy development cannot be separated from the sociocultural context in which it occurs any more than it can ignore how brain functions influence it. This is just another way of saying that while we have become quite sophisticated about the world around the adult illiterate, still very little is known about the world within that individual.

Chapter II

THE OUTSIDE CONTEXT

The black student who is educationally, socially, and economically disadvantaged is likely to be quite different when compared to the white student of the same class. To begin with, the black student is more cynical.../he/ will tend to be more worldly though less sophisticated academically. He shows much more ingenuity outside of the classroom. Inside the classroom he has always been more of a spectator than a participant because he does not have a great deal of confidence in his ability.

William Moore, Jr.
Against the Odds, 1970

The distorted assumptions about student personalities that such tests /e.g., the Omnibus Personality Inventory/ proclaim are central to the major book-length works on community college students. When looking into them,...it is imperative to search for the missing connections between ethnicity, class, and intelligence and also for the unstated social functions of the concept of ability itself--issues critical to a true understanding of these "new college students' real strengths and limitations.

Stephen Zwerling
Second Best, 1976

Thus, by one of history's ironies, the majority became a minority. Spanish speaking people who had been the first whites to settle the Southwest, became, if not an alien group, an alienated group. They were Americans, yes, but with a language and culture different from the language and culture of the region in which they found themselves....The greatest barrier to the Mexican-American child's scholastic achievement ...is that the schools, reflecting the dominant view of the dominant culture, want that child to grow up as another Anglo.

Herbert Gans, "The Working Class, Lower Class and Middle Class," Language and Cultural Diversity in American Education, Abrahams and Troike, 1972

Despite the efforts of hundreds of dedicated educators and researchers, the attrition rate of minority students in postsecondary institutions continues to climb to unprecedented levels (Roueche, 1979, p. 2). The attrition rate for Chicanos appears to be higher than that for any other minority group (Lopez, Madrid-Barela and Macias, 1976, p. 25). Since most community college students come from similar socioeconomic backgrounds--lower middle class or working class (Zwerling, 1976; Moore, 1970; Bowles and Gintis, 1976)--differences in performance suggest that cultural and ethnic factors may provide clues to explaining the attrition rate, and eventually, remedying it. This chapter attempts to put into perspective the diverse sociocultural variables which affect adult minority students involved in the literacy acquisition process, by reviewing the literature which covers contextual variables of the educational setting: ethnicity, culture and class, alienation, sociolinguistics, and bilingual/bicultural studies.

At the outset, however, two facts suggest that simple cultural differences may prove insufficient to explain the variation of performance among community college students. First, there are obvious "cultural" or "ethnic" differences between blacks and Mexican Americans, including religious orientation and history of treatment by Anglos in Texas and other states. Though both groups appear to lag behind Anglos in rate of success in their community college experiences, black culture and Mexican American culture are sharply different from each other, therefore suggesting that it is not simply the presence of a particular culture that will explain the performance differential (i.e., if blacks do poorly because of black culture, why do Mexican Americans do badly and vice versa?). Second, other culturally different groups, for example, those of Oriental extraction, Polish, et cetera, show much less difference from Anglos in their community college work. Parker (1975, p. 30) has shown that Oriental Americans whose primary language may be Chinese, Vietnamese, Thai, or Japanese, achieve near the norm. This second factor suggests that something more than "cultural difference" or language difference may be going on. And it also points to the need to investigate those characteristics (of whatever kind) that are shared by Mexican Americans and blacks on the one hand, and by Anglos, Oriental extracts, et cetera, on the other. As evidenced by the plethora of concepts involved--culture, ethnicity, social class, language variance, acculturation, and alienation--the difficulty in exploring minority characteristics lies in the fact that all of these variables are occurring simultaneously and in interaction. But the difficulty is more complex than mere interaction because, in much of the literature, categories of ethnicity and class are mingled together in an unproblematic way. Both ethnicity and class emerge as variables that need to be better understood and separated in their effects. An analysis which attempts to separate ethnicity from class in order to see what each may elucidate will also help in deconstructing notions like "the culture of poverty."

A related difficulty, too seldom referred to in the literature, is the "interface" of cultures, particularly Black-Anglo and Mexican American-Anglo. The thrust of this interface suggests that in many ways the minority person is much more familiar with the mainstream Anglo culture than the reverse. An Anglo can go through his regular everyday activities and have very little contact with minorities. The minority person, however, may very well have to come in contact with an Anglo banker, an Anglo teacher, an Anglo landlord, and other Anglo business people, merchants or bosses nearly every day or many times daily. A black, for example, can understand both Standard American English and also Black English, and can speak (at least) Black English, and possibly a variant or approximation of Standard American English. A mainstream Anglo is often able to speak and understand Standard American English, but probably understands Black English only poorly, if at all, and certainly cannot speak it. In cases where this is true, it is the minority member who is more effectively "bicultural" and has more experience in code-switching or culture-switching to deal with a wider variety of relationships. Indeed, the realities of the culturally different student whose formal education and exposure to the mainstream culture may or may not have been peripheral or tangential will clearly diverge from the realities of the mainstream actors.

In his Steps to an Ecology of Mind, Gregory Bateson has formulated a model of four orders of learning, from lower to higher. The third order of learning has to do with the context of learning, which Bateson characterizes as "learning how to learn" (Bateson, 1972). It is at this stage that Dr. Larry Hamilton (personal communication) of the University of Texas at El Paso has worked with both Tigua Indians and Mexican American students. Hamilton believes that it is inappropriate to apply the Anglo reality to the Mexican American, for in a cross-cultural setting where remediation is the primary focus, the culturally different student may be part of one context (i.e., the Mexican American culture) but the teacher and the teaching system may be (probably will be) in another context (Anglo). If we are going to understand the interactions between the system and the student, then we not only have to deal with context, but also with culturally specific learning strategies. (Chapter IV will treat these in more detail.)

Ethnicity/culture and class can be used as "rallying cries" for specific strategic maneuvers, as defenses, or as havens against the encroachment of middle class values. Just because class and ethnicity are used as viable explanations of reality of both researchers and their "subjects" does not mean that these categories are the ultimate explanatory ones. They may be, on the other hand, the "folk categories" that the researcher has used to organize reality. It is also possible that these terms are used as encodings of more generalized problems of alienation. Alienation, indeed, can be expressed in terms of ethnicity, or class, and also in terms of family, power, or language.

The historically variable and problematic nature and usage of terms which designate the dimensions along which students at the community college are different provides another difficulty. The variety is well known: culturally different, subculture, folk culture, traditions, traditional, folk traditions, ethnicity, ethnic group, minority. The three major terms involved in this difficulty are culture, tradition, and ethnicity, all of which are concerned with history, shared beliefs or norms, continuity, and difference.

All three terms have been used to refer to extremely static notions, or fixed clusters of beliefs or people. Here Raymond Williams refers to this tendency in the use of the word "tradition".

> ...'tradition' has been commonly understood as a relatively inert, historicized segment of a social structure: tradition as the surviving past. But this version of tradition is weak at the very point where the incorporating sense of tradition is strong: where it is seen, in fact, as an actively shaping force (Williams, 1977, p. 115).

Williams attempts to show, to the contrary, that the actual use of notions of tradition reveals that much of what is considered as traditional is both selective and very much a contemporary phenomenon.

> What we have to see is not just a 'tradition' but a selective tradition: an intentionally selective version of a shaping past and a pre-shaped present, which is then powerfully operative in the process of social and cultural definition and identification (Ibid., p. 115).
>
> It is usually not difficult to show this empirically. Most versions of 'tradition' can be quickly shown to be radically selective. From a whole possible area of past and present, in a particular culture, certain meanings and practices are selected for emphasis and certain other meanings and practices are neglected or excluded. Yet, within a particular hegemony, and as one of its decisive processes, this selection is presented and usually successfully passed off as 'the tradition', 'the significant past.' What has then to be said about any tradition is that it is in this sense an aspect of contemporary social and cultural organization, in the interest of the dominance of a specific class. It is a version of the past which is intended to connect with and ratify the present. What it offers in practice is a sense of predisposed continuity (Ibid., pp. 115-116).

Tradition, then, according to Williams, amounts to "a deliberately selective and connecting process which offers a historical and cultural ratification of a contemporary order" (Ibid., p. 116). The notions of culture and ethnicity can be used in much the same way.

In order to provide a specific example of one way in which these observations can be made relevant to work with blacks and Mexican Americans, Reed's observations on Black Nationalism are appropriate.

> Thus, while militant black nationalism developed as a reaction to the assimilationist approach of the Civil Rights movement, it simultaneously envisioned an obsolete model of black life. This yearning was hypostatized to the level of a 'black culture'--a romantic retrieval of a vanishing black particularity. This vision of black culture, of course, was grounded in residual features of black rural life prior to migrations to the North. They were primarily cultural patterns that had once been enmeshed in a lifeworld knitted together by kinship, voluntary association and production

> within a historical context of rural racial domination. As that lifeworld disintegrated before urbanization and mass culture, black nationalism sough to reconstitute it (Reed, 1979, p. 85).

Reed then speculates on the consequences of this retrospective construction of a cultural reality.

> Black culture posited a functionalist, perfectly integrated black social order which was then projected backward through history as the Truth of black existence. The 'natural' condition of harmony was said to have been disrupted only when divisiveness and conflict were introduced by alien forces. This myth delegitimated internal conflicts and hindered critical dialogue within the black community (Ibid., p. 86).

Reed's interpretations may not hold for all blacks, or even the entire Black Nationalist movement, but they are indicative of the extreme manipulability of concepts like culture, tradition, and ethnicity.

This manipulation or flexibility of labels and notions of cultural heritage is a factor for insiders and outsiders to the "cultural" group in question, for the media, and certainly, for the social scientists who have not been ignorant of problems arising from these considerations.

> The fieldwork greats of the 1940's and '50's knew they were dealing with what we now call ethnic groups; they knew they were often as not creating arbitrary and artificial boundaries (Cohen, 1978, p. 380).

Especially recently (the 1970's) the status of ethnic labels have emerged as particularly problematic for anthropologists.

> ...ethnicity opens up the question of categorization by nonmembers (the objectivist emphasis) as opposed to a person's own identity or identification with a particular ethnic group (the subjectivist emphasis) (Ibid., p. 381).
>
> Barth's contribution was in seeing this problem and deciding to view ethnicity as a subjective process of group identification in which people use ethnic labels to define themselves and their interaction with others. Southall went even further to suggest that the confusion over ethnic labels should provide a key to the evolution of social-cultural differences (Ibid., p. 383).

Neither ethnic groups, subcultures, or culturally different students fall easily into clearly defined categories. Instead of regarding this as an unfortunate problem, it should be seen as a significant datum. This is being increasingly recognized.

> To summarize, ethnicity, as presently used in anthropology, expresses a shift to multicultural,

> multiethnic interactive contexts in which attention is focused on an entity--the ethnic group--which is marked by some degree of cultural and social commonality. Membership criteria by members and nonmembers may or may not be the same, and the creation and maintenance of the ethnic boundary within which members play according to similar and continuing rules is a major aspect of the phenomenon (Ibid., p. 386).

The use of terms such as culture and ethnicity to refer to either subgroups or processes is, then, more an artifact of the contemporary situation, and less an authentic artifact of some objective past. Because such terms are selective and retrospective, they are flexible and amenable to manipulation by in-groups, out-groups, the media, and social scientists. Considerations of ethnicity or culture can never be static.

> ...it is important to note that ethnic group formation is a continuing and often innovative cultural process of boundary maintenance and reconstruction. Once the ethnic identities and categories are triggered into being salient, cultural rationalizations for the legitimacy of the mobilized grouping are actively sought for and created by those involved (Ibid., p. 397).

In addition, the political implications and possibilities are very much an inherent part of the cultural processes.

> Ethnicity is not a 'most general' or widest scaled identity but rather it can be narrowed or broadened in boundary terms in relation to the specific needs of political mobilization (Ibid., p. 386).

Without belaboring the problematic nature of these terms, and the associated academic and the "hidden curriculum" aspects of the schooling context, minority students, when compared to middle class Anglo students, do not do as well in the teacher-taught relationship and therefore fail to learn a wide variety of outcomes expected by the traditional educational structure: conformity, discipline, central skills such as reading and math, ability to abstract and generalize as measured in certain distinctive ways on cognitive tests, and various kinds of socially appropriate behavior. These, of course, are the outcomes educators want. Whether these are the same outcomes that minorities themselves are seeking is still a moot question and should be carefully scrutizinized along the lines suggested by Paulo Freire and others. Unfortunately, the literature is weakest at this point.

From this preliminary statement of the problem, then, several questions emerge:

(1) Is there some aspect of Mexican American culture that is also present in black culture that will help to explain the performance of these two groups in community colleges?

(2) Is there some quality of experience shared by Mexican Americans and blacks in American society (including the specific community college experience) that will help explain the performance of these two groups in community colleges?

(3) Is there, coincidently, a particular aspect of Mexican American culture or experience, and another (different) aspect of black culture or experience, that have the similar effect of leading to poor performance in a community college situation?

With these questions and caveats in mind, the literature reflecting strands of relevant research can be reviewed.

Ethnicity--Complexity of the Issue

Ethnic status can be both achieved and ascribed. Blauner (1966) suggests that in a modern industrial society with marked geographic and occupational mobility, personal identity and style of life are more often linked to occupation than to the older tradition of kinship, region, or ethnic attachment:

> In general, working-class jobs in the United States have lower status than white collar and professional ones. For this reason, many factory workers...do not find that occupational identity contributes to feelings of self-esteem and self-approval. In such a situation, there is probably a tendency to de-emphasize occupation and work as important components of selfhood and to stress in their place other loyalties and statuses such as ethnic identifications and family relations (p. 30).

Here there is an inverse relationship between high occupational status and ethnic identification. There is achieved ethnic status by blacks and Mexican Americans as well as ascribed. Not only are groups expressing pride and nativism, but the lack of job status reinforces a small scale family orientation as a source of identity which is shared by many non-ethnic low status individuals as well. There seem to be many similarities in the life-style and values of working class whites and those of minority groups. Class, ethnicity, and race can be seen as factors of cultural difference from the mainstream--middle class, white, large scale, formally-organized industrial society.

If ethnic status is both achieved and ascribed, it is, then, not simply an objectifiable attribute. Rather, it is a strategic possibility that may become useful in manipulating a situation. This point of view, of course, diverges from the more commonly accepted view of what an ethnic group consists: an ethnic group is defined as a group that shares a common origin, in-marries, shares overt (dress, cultural customs) and covert (values) identity markers and is seen as a distinct group by both insiders and outsiders. Barth (1969) emphasizes ethnic identity as a consciously maintained system with boundaries between the in-group and out-group(s). Overt signals in dress, language, and lifestyle may change, but the basic values and self-perceived identity may persist and set a person apart from the dominant social group. In poly-ethnic groups, the greater the difference in values, the more inter-ethnic social constraints occur. DeVos and Romanucci-Ross (1975) also see ethnic identity as a symbolic system. They emphasize the inside identity rather than outside ascribed status (based on overt differences in appearance). Ethnic identity can also be seen as expressive behavior--in-group nurturance in the face of the crisis of culture contact. It is a mechanism to lessen a sense of impotence and alienation.

A classic example of ethnicity conceived of as a strategic possibility comes from Edmund Leach's Political Systems of Highland Burma (1970), an anthropological analysis. Leach shows that the respondent's claim to be Kachin or Shan were related to their social and political situations as a matter of strategy and not as a matter of geography, genealogy, mode of subsistence, or economic position (although these were, of course, factors).

Moerman (1968) in "Accomplishing Ethnicity" documents how ethnicity may be only loosely correlated with objectively distinctive traits. A particular ethnic label is used when it provides a certain identity with accompanying manipulative possibilities, one of which may be an avoidance of class labels. The Lue, a "tribal" group of southeast Asia, share many objective traits with neighboring groups. Moerman describes how it is that "the Lue are an ethnic entity despite the evident triviality of their 'distinctive' traits and the total destruction of the political state that once defined them" (p. 57). Although their supposedly "distinctive" traits are not objectively distinctive, villagers label them as Lue traits. Moerman notes "since multiple identifications are always present, the 'truth' or 'objective correctness' of an identification is never sufficient to explain its use" (Ibid., p. 61). Moerman further shows how the label "Lue" as opposed to other alternatives (such as "backwards villager" or "peasant") has positive advantages in certain contexts and gives the Lue the opportunity to employ comparable ethnic terms for others. He further suggests that the Lue use a label of ethnicity in order to avoid using a label of class (Ibid., p. 64). Although ethnicity has been discussed as a group, as a behavior, and as a shared belief system, Moerman suggests that it may also be a strategy or an achievement. Given the complexity of the issue of ethnicity, it should probably be considered problematic, for both the person (minority individual) involved, and for the investigator, who should be aware that ethnicity can be used in various ways.

Obidinski (1978), who has analyzed this difficulty in-depth, points out that every definition of ethnicity has sociocultural, psychological, anthropological, and political-civic connotations. The sociocultural connotation has been shaped by Barth (1969), who stresses that an ethnic group survives by means of boundary maintenance. The psychological functions of ethnicity have been stressed by Herberg (1955) and Greeley (1971). Gordon (1964) focused on political-civic connotations of ethnicity which he saw as human groups integrated through a sense of peoplehood, common ancestry, or similar historical experience.

All of these separate dimensions of ethnicity make a common level of discourse almost impossible. It does not help matters that people can be sorted into ethnic categories by several classifications: demographic (as in census data, covering subjective responses to ethnic identity, language classification, ancestral background, and data on income, occupational, or educational levels), arbitrary nominal classifications (the use of religious and nationality categories for convenience), and consensus classification.

This last classification most appeals to Obidinski because of its subjective and typological nature:

> On the basis of stereotypes, social conventions, or other definitions of social standing, persons identify with particular groups--or are so identified by others....Consensus not only defines the situation for those outside the ethnic group but also influences self-images of persons within the group...(pp. 217-218).

Typologies based on subjective variables reflective of intensity of ethnicity (such as religious involvement, place of residence, friendship choices, marriage preferences, political, occupational patterns, etc.) are superior to traditional "objective" measures (scales of racial, nationality, religious background, and demographic data).

Obidinski's operational definition of ethnicity, then, includes three subjective elements:

(1) Cultural-heritage--This is based on the individual's "response to elements of inherited national and folk culture represented by native language; music, literature, arts; traditional holidays and customs, and religious beliefs."

(2) Common adjustment--How much does the individual recognize a similar historical experience or shared minority group status? Such recognition and/or response may come in reaction to stereotypes, ethnic jokes, discrimination, and political exploitation.

(3) "The designation of varying degrees of ethnicity depends upon the existence of consciousness, or common attitudes, which affect behavior. These subjective influences may be measured through items ranging from those which elicit self-identification to those which specify peer group preferences."

He argues that intensity of religious involvement, for example, add more (qualitatively) to an ethnic classification than does a simple (and vague) religious affiliation category.

Several authors have addressed the question of why ethnic groups persist in the United States. Prewitt (1969) has looked at outside blocks to assimilation of institutional racism. Other reasons given for ethnic persistence are the internal colonialism of non-European minorities and poor individuals' stress upon family or ethnic ties to bolster self-esteem (Blauner, 1972). When the factors of ethnicity as a strategy or an achievement are considered, however, they place the question of "why ethnics persist" in a different light.

Factors can be divided at least in a couple of dimensions: external versus internal (i.e., racial segregation versus search for self-esteem) and causes versus consequences (i.e., is the need for a certain identity a cause of persisting ethnic groups, or is the existence of some sorts of groups a cause of the perceived need for a certain self-identity?).

However the ethnicity factor is viewed, there is much work yet to be done before an understanding of ethnicity can be presented in a meaningful way within the classroom. Paredes (1977) has noted that some Chicano students have made bitter attacks upon the ethnographies of Mexican Americans which have been developed by Anglo anthropologists: "Most Chicanos do not accuse anthropologists of overt racism. They do charge unconscious bias, the fitting of data to preconceived notions and stereotypes" (Paredes, 1977, p. 2). Paredes, in addition, cautions researchers in several hazardous areas:

(1) Sampling techniques have been contaminated by factionalism and political philosophy.

(2) There is a greater need for Spanish fluency including current usage, such that wrong interpretations are not made upon the basis of mistranslation.

(3) There must be a knowledge of joking and puns so that facetious remarks are not taken literally.

(4) It must be understood that many informants are the personality types to be verbal performers--jokers or deviants--who will "put on" the researcher by telling him what he wants to hear.

(5) Older, "idealized" behavior must be checked out carefully to insure that it correlates with actual behavior.

(6) Alternate causes for behavior must be examined rather than accepting convenient stereotypes.

(7) Nonverbal communication must be recognized as a possible confounding variable to verbal communication.

Singleton (1977) laments the fact that researchers have used ethnicity as a categorical reference rather than exploring it as a social and political process. Although recognizing the standard variables of national origin, language and religion, he insists that researchers observe ethnicity as an expressive and instrumental pattern of action in response to an environing society. Although minority patterns do have a shaping influence, Singleton further cautions that the variations of individual experience greatly complicate our understanding. Other proponents of the functional process of ethnicity (Stern, 1977; DeVos and Romanucci-Ross, 1975) have observed that ethnic identity is very much an expressive behavior, a matter of in-group nurturance overcoming crises of culture contact.

Focusing upon the residential isolation of Mexican Americans, Brussel (1971) suggests that traditional beliefs are likely to remain relatively intact while outside culture groups will probably remain ignorant of these beliefs. Wary of outsiders, centered within themselves for economic and social ends, and involved in extended families, Mexican Americans tend to differ from Anglo Americans in the following ways. Traditionally, the Mexican family is patriarchal: the father tends to be the authority figure making final decisions, and the mother tends to be a model of purity, primarily interested in nurturing the children. Fathers entertain friends outside the house and do not necessarily lose prestige among male friends for extramarital affairs. Oldest sons tend to have more authority than other siblings. At adolescence, boys form loose aggregates of male friends. Girls are more closely protected by mothers and sisters who group together in a male-dominated world. When sisters marry, their husbands are called *concuñados*, as a distinct category of brother-in-law because sisters remain so close.

The extended family (the nuclear family plus mother's sisters, grandparents and first cousins) is linked by frequent visits and mutual obligations. The institution of *compadrazgo*, or co-parenthood, links adults who are godparents to the same child. These ritual kinsmen may be blood kin, but even if not, they are visited frequently and treated as kin. Ceremonies of baptism, first communion, confirmation, weddings, and funerals are major social family gatherings.

Outside the kinship network, suspicion and polite social distance prevail. The *machismo* of the male demands that he defend the honor of the family by fighting those who belittle it. This in-group orientation leads to problems dealing with the larger society and its emphasis on non-kin cooperation and respect for social position (as opposed to respect for the particular person in the position).

Brussell (1971, p. 179) sees these major traditional value differences between Chicanos and Anglos:

Mexican American		Anglo
(1) Traditionalism and familism	vs	change and egalitarianism
(2) Personalism--person in role	vs	respect for role in itself
(3) Being orientation--work as necessary	vs	doing orientation
(4) Nature over man--only God knows the future, large group corruption as inevitable	vs	man over nature--the future as controllable
(5) Love of fiestas and rite of passage rituals, formalized social relations	vs	informal social relations
(6) Folk medicine, curanderismo, evil eye, loss of soul, hot-cold ideas of illness	vs	scientific, specialized, medical bureaucracy

Many of these ideas coincide with those of Lewis' "culture of poverty" folk-fatalism, small scale social relations that include blacks and working class whites as well as Mexican Americans.

Manuel (Brussell, 1971, p. 175) sees that Chicanos face four problems dealing with mainstream culture: (1) separation of Mexican Americans into barrios; (2) differences in cultural values and lifestyle; (3) language difficulties; and (4) poverty. These problems are also faced by blacks, urban American Indians, and Puerto Ricans. Brussell says that four factors retard acculturation into the mainstream: (1) traffic back and forth into Mexico; (2) separate barrios that cause divisions and maintenance of social stereotypes between the subculture and the larger system; (3) few Chicanos as models of success in the larger society; and (4) mistrust of outsiders (pp. 191-192). The subcultural alienating factors (2, 3, and 4) also operate with respect to blacks and Puerto Ricans. Four factors that promote acculturation are: (1) small size ethnic group relative to mainstream, (2) urbanization, (3) increased mobility, and (4) formal education (in other words, widening the intensity of social relations in time and scope/scale) (p. 193).

The most interesting aspect of Mexican American values is that many parents believe that higher education is frustrating and useless for their children. An "educated" person is an individual well-trained in courtesy in his immediate social environment, not one who attends school the longest. Low school achievement is not considered a handicap within the smaller group, but a deficient social education is. This value orientation that excludes fierce competition in a materialistic Anglo world can, of course, lead to voluntary school disattention and detachment.

Bram (1971), who deals with adjustments immigrant Spanish-speakers (Puerto Ricans in this instance) must make in the United States, suggests that poverty in Puerto Rico with its mild climate and close extended family ties is less grim than in the United States. Godparents and extended family members provide support for children or women in situations with defaulting husbands or family heads. Most Puerto Ricans believe that family ties were not as close in New York as in Puerto Rico (Lewis, 1971). The high birth rate on the island has forced out-migration to search for employment. Common-law marriages, about 30 percent of marriages in Puerto Rico, cause problems within U.S. bureaucracies.

Bram mentions that adjustments--due to rapid social change and animosity between traditionalists and upwardly mobile Puerto Ricans--also cause problems. He lists:

(1) racial discrimination resulting in withdrawal into the family group and causing discord between "luckier" light family members versus darker ones;

(2) a gradual lessening of influence over children as they learn English and adopt new values;

(3) erosion of traditional male authority as women get jobs not available to men, leading children to have less respect for an under-employed father;

(4) diminishing primary social controls by close neighbors, merchants and teachers, making people feel uncomfortably detached;

(5) loss of sociable street life as people live in isolated apartments rather than island plazas.

Lewis (1971) says that there was little change in family life in New York; Spanish was used in the home, the religion was Catholic, and customs remained unchanged. Most changes were economic and educational (9.5 years vs. 5.9). He said that Puerto Ricans had poor jobs, felt lower self-esteem in Anglo society, were segregated with blacks in housing and social life, and tended to have a higher incidence of broken marriages. A sense of inferiority led to Puerto Rican Americans' hostility toward authority figures and caused them to withdraw into subcultural life with native language and customs. They rarely left the barrio, and the majority resented upwardly-mobile individuals.

Another culturally/ethnically distinct group, the Native American population, differs in still more subtle ways. Dozier (1971), an American Indian and an anthropologist, gives a general overview of most American Indian groups as contrasted to whites. Most tribes have the extended family and are not politically organized beyond the hunter group. Religion is animistic with a medicine man, and no group has tried to impose its beliefs on any other group. Although Indian languages vary, most native speakers tend to have trouble using English--the language of a complex culture. Indian values contrast sharply with those of the mainstream:

Indian		White
(1) Communication with intimates--actions express feelings	vs	verbal communication
(2) Cooperative work and free exchange of property	vs	competition, accumulating goods
(3) Tradition--age gives wisdom	vs	change as progress
(4) Reverence of contemplation (sages or folk philosophers)	vs	utilitarian knowledge (schools)
(5) Harmony with nature	vs	control over nature

Initial hostile contact with whites has made Indians suspicious and hostile toward the government. Deprivation of land and resources has led to resistance to acculturation. Children bring this alienation into schools where they feel more resentful because their performance is rated as poor, resulting in lack of motivation and a high drop-out rate.

George DeVos (1975) has developed a conceptual model of ethnicity which encompasses those of Brussell and Dozier. In this model of group allegiance he contrasts positions of groups based on time (past, present, future) and scope (specific to general). Ethnic groups are past-oriented, often rather small in scope. The community college in this model would be present-oriented, with both citizenship in the U.S. and occupational development as major goals. As individuals from ethnic groups become politicized, their time frame is changed to future orientation and their scope becomes more general. The idea of *scale* or scope might be central to what makes an ethnic group (or regional or class group) distinct from the "national culture": the ethnically distinct group relies on more primary relationships than on the identity with the national goals that the community college promotes as part of the national educational system.

The concept of scale is important both from a cognitive point of view and from a sociocultural point of view. Freire (1970), for example, holds as a major tenet that meaningful literacy is dependent upon, perhaps even synonymous with, enlargement of scale. Literacy enables a group to name the world, as they see it--i.e., name their own particular small scale life, providing a link to the larger world.

Visualizing a cultural transformation taking place, Knight and Spencer (1977) have devised a value continuum running from "competitive" behaviors to "altruism/group enhancement" behaviors. The "dominant" (U.S.) culture is considered the competitive end and the Mexican American barrio community is seen as the altruistic/group enhancement end. Their study demonstrates that second and third-generation Mexican Americans are becoming more competitive and less group-oriented than earlier generations.

Evidence for the rapid changes taking place among minorities, especially among the Mexican American population, abounds. David F. Gomez (1973), for example, describes how a critical consciousness often symbolized as Aztlan or La Raza, is emerging among Chicanos who are challenging formerly sacred bastions--the Catholic Church and the legal system, to name but two. Solidly entrenched now is a grassroots movement to eradicate the stereotype of the Mexican American. The image portrayed by Anglo researchers such as Brussell (see the chart on p.23) no longer represents the new generation of Chicanos.

The new generation promises to fight *against* negative images and *for* self-dignity (Rodriguez, 1972, p. 186). Urbanization of the Chicano, regional leadership based on widely supported organizations, the trend toward separatism, liberation awareness, and a sense of unity with the Third World have added stability, cohesiveness, and strength to the changing Chicano consciousness (Acuña, 1973, pp. 222-277).

The rebirth of Chicano arts and literature vividly reflects the reality of these changing values and attitudes. A dramatic example comes from Inés Hernández Tovar's poem, "Guerrillera Soy" (Tovar, n.d., p. 28). The poem affirms that the author remains loyal to her Raza, a fighter for dignity and freedom and for the maintenance of the culture, in all the aspects of her being.

> Con cada gota de mi sangre
> con toda mi mente y mi ser
> con cada suspiro
> pensamiento
> lágrima y anhelo
>
> con cada coraje que paso
> y en cada demuestra de amor
>
> En cualquier momento
> que me'ncuentras
>
> Guerrillera soy

Culture and Cognition

The literature on culture and cognition fills volumes. An entire chapter of this monograph, Chapter IV, has been devoted to the subject of cognition, with stress on the cultural variables suspected to be linked to cognitive processes. At this point, however, it is appropriate to deal at least briefly with this relationship. It has been assumed that cognitive skills/processes are in part the result of sociohistorically specific encodings of experience (Vygotsky, 1962, 1978; Luria, 1976; Scribner, 1974). Differences in cognitive processes (evidenced by certain tests) are often obvious and sometimes clear-cut. Causes of these differences are only partly understood. Luria attributes cognitive differences and cognitive shifts to planning ahead, collectivization, learning to read and write, becoming part of a more advanced culture, and greater complexity of activity (Luria, 1976, p. 79, passim).

Cole and Scribner have found that cognitive shifts or changes in cognitive processing correlate with exposure to western schooling, and/or an urban environment, and/or wage labor for short periods of time. In the famous Vai example (see pp. 74-75). Cole and Scribner were able to separate the effects of schooling from the effects of literacy. They found changes in cognitive processes to be associated with schooling, not literacy.

Thus, though differences in cognitive processing are fairly clear, both their causes in the social environment, and their consequences for literacy, are yet unclear.

Culture and Class

Both cultural and economic notions are so artfully woven together in the literature that an understanding of their ambivalence is rather difficult to achieve. As we have already noted, some theorists (e.g., Blauner, 1966) have suggested that distinction from mainstream culture may be made on the basis of class, ethnicity, or race. That there are many similarities between working class whites and ethnic minority groups, especially with regard to the role of the family, only complicates the issue of culture and class. Both ethnic and lower socioeconomic status subgroups (small-scale in terms of time and space) may constitute subcultures which are alienated from the mainstream bureaucracies, including the schools. Becker (1963) noted that "culture arises essentially in response to a problem faced in common by a group of people...able to interact and communicate with one another effectively" (p. 81). Subgroups of outsiders often employ voluntary self-segregation, criticize outsiders, and use special lingo within the group. Voluntary cultural differences might apply to ethnically-proud minorities who maintain symbolically-different expression from the national norms. The theory of interaction of deviant cultures within other groups can apply to developmental studies students who are culturally different. These students are so perhaps because schools reflect the rules for the mainstream culture, while it is the teachers who determine which differences are dysfunctional to learning.

What is functional for in-group life could be dysfunctional to success in school. In ethnic (or poor) subcultures, "the most notable attributes of a 'folk society', such as a sacral view of life, familial ties, a personalistic conception of the world and universe, and a traditional behavior system can be maintained"(Stern, 1977, p. 8). Cross (1976), Moore (1970, 1973), and Roueche and Snow (1976) have described high-risk students as those students who are united by poverty and a certain set of values not unlike the lower class whites, blacks, American Indians and Mexican Americans who have been clumped together as culturally different in this chapter. What these groups have in common is a deeply discrediting personal characteristic, a stigma. Goffman (1963) views deviance and its relationship to stigma as a flaw. Lower class persons, minority members who turn away from conventional routes of mobility in the public schools, and the hardened urban poor are all groups of deviants that are tolerated as long as they restrict themselves to their subcommunity. Deviance is a flaw in the presentation of self in society, a reason for self-hate, withdrawal, ambivalence in outside company, a desire to "pass" as well as a desire to feel "normal" and be unrepentant despite the stigma. Both ethnicity and class are stigmas in Goffman's view. In this country illiteracy is likewise a stigma. The resulting situation is one in which stigmatized people remain so and are further stigmatized by illiteracy. Thus, the teacher as a "normal" and threatening presence should be aware of the danger felt as the culturally different/developmental studies student first enters the community college classroom. Counseling, peer help systems, and teaching machines accompanied by teacher warmth can lessen the pain of the exposure of the illiteracy stigma.

United by poverty and by values that differ from white, middle class norms, culturally different groups (lower class whites, blacks, Mexican Americans, Puerto Ricans, American Indians, et cetera) appear to share a condition of *relative deprivation* that is common in rapid culture change and within culture/class of multiethnic societies. Thus we have a situation where both lower class individuals and ethnic minorities have been grouped together under the category of "pariah". This ambivalence, of culture and of economics, is expressed in the concept, "culture of poverty," and also in the concept of "cultural deprivation". The term, *culture of poverty* puts primary emphasis on poverty, an objectifiable, material condition, which suggests that certain symbols, beliefs, and cognitive processes are associated with it.

William Moore (1970) vividly described a hypothetical situation reflective of the "culture of poverty" phenomenon:

> Archie is a black student who has the scars from rat bites on his hands and face because he was put to bed at night with a penny sucker (candy) to pacify him when there wasn't any milk....It took him a week to read a book that a student with more demonstrated ability could read and comprehend in two days. Archie was slow in mathematics, that is, he never seemed interested in the subject beyond what was necessary for him to function. He could work well with motors. Archie could dismantle a motor or a transmission or any other power plant on an automobile and reassemble it with efficiency and precision. Yet, he was frequently unable to read with facility and understanding the manual which gave instructions as to how it should be done (pp. 30, 31).

The suggestion here is that Archie was a victim of a socioeconomic situation, not a "cultural" or a "culturally deprived" situation.

The term cultural deprivation is more ambiguous than the "culture of poverty" since it fails to make clear who or what is deprived. It could be asserted that minorities or the lower classes are suffering from deprivation of a cultural nature (as opposed to deprivation of a material nature). That is, it could be argued that these stigmatized people are suffering from their own culture being stripped away from them. Cultural deprivation could also be interpreted to mean that these people are socialized in such a way that they are deprived of the benefit of the dominant (and supposedly, superior) Anglo culture.

Unfortunately, the terms culture of poverty and cultural deprivation have been confused with the term relative deprivation. Aberle (1962) defined the latter as "a negative discrepancy between legitimate expectation and actuality" (Aberle, 1962, p. 209). Relative deprivation is not absolute deprivation. To a multimillionaire, loss of all but his last million is seen by him as a major deprivation while a hunter-gatherer group that fails to find game occasionally does not feel deprived. Aberle says that rapid cultural change can create discrepancies between legitimate expectations and actuality by worsening the conditions of a group (American Indians or blacks) or by exposing the group to new standards (Mexican Americans or Puerto Ricans).

There are four rough types of deprivation: possessions, status, behavior and worth. The concept of deprivation of worth or status is important in examining the position of the culturally different student. So long as the student stays within his own group, his behavior and worth are valued. But in the schools, his different lifestyle is often seen as inferior to that of the mainstream, and the classroom can become a stressful environment, a place to distrust or avoid.

Lewis (1971) studied Puerto Rican poor people in New York and Puerto Rico; he formulated a theory of urban subgroups of poor people with a separate lifestyle--the culture of poverty. Based on TAT and Rorschach tests and a SES questionnaire, Lewis found a pattern of withdrawal and nonparticipation in social groups outside the family of long-term urban poor (linked to Wilson's concept of small scale). There are four distinctive dimensions of the people who form this culture: they form a subculture within a larger society; they are in a slum community social system; they have a family pattern that is matricentered and chronically unemployed; and they have distinct values of hostility and withdrawal from dominant U.S. values and institutions (police, church and school). The culture of poverty population is described as having values of powerlessness, weak egos, maternal deprivation, a present-time orientation, and little knowledge of the outside world.

The culture of poverty phenomenon is not found among primitive peoples because they are not unemployed, they do not lack social connections, and alienation is irrelevant among them. The phenomenon is most widespread in pre-welfare, capitalist societies, often with conditions of conquest and the elimination of native social structure. This theory is clearly related to relative deprivation in A.F.C. Wallace's concept of cultural distortion (Wallace, 1956).

Leacock (1971) criticizes Lewis' culture of poverty concept as too negative and closed. She emphasizes the plasticity of adult behavior and says that the view is middle class ethnocentrism. The behavior and attitudes Lewis observed were *adaptations* to poverty, not real beliefs. She criticizes sociological and educational literature in the area that judges lower class *differences* as *problems*. Lewis never said that the slum life pattern could not be changed. This "adaptive life-style" in face of a hostile environment, along with values of alienation and anomie, could be a cause of learning disability. Many educators have tended to look at culturally different children as culturally "deprived" products of dysfunctional socialization; e.g., low I.Q. scores are taken as proof that "deprived" children have low ability. Class differences can affect lifestyle and participation in social institutions; it may be that the culture of poverty is the cultural lifestyle of alienation from a dominant society that offers *no* rewards.

Forbes (1971), among others, has criticized the cultural deprivation theory which blames failure on minority students and their families:

> The concept of cultural deprivation as it has frequently been used is simply a belief that non-Anglo minority groups do not possess a culture which can be utilized...by the schools. The children in the minority group are "deprived" because they are not carriers of the Anglo middle class heritage, and the task of the school is to make up for this deficiency. The school is the device for "assimilation", i.e., making the United States a homogeneous nation of multi-hued Anglo Americans (Forbes, 1971, p. 9).

Issues of acculturation and assimilation must be discussed in terms of both cultural variables (changes in meaning, beliefs, values, et cetera) *and* in terms of economics, since change in one is often accompanied by change in another (e.g., movement to middle class lifestyle). This complex interrelationship between culture and economics makes the effects and processes of change difficult to isolate.

In fact, such change may be more insidious than we are willing to recognize. Forbes, for example, mentions that non-white individuals receive only five to nine years of school, and the last few years are psychologically destructive: "A major symptom of this process is the withdrawal or lack of response of pupils in late elementary grades and high school" by Indians and also many blacks in slum schools (Forbes, 1971, p. 7). Forbes questions whether the educational gap has been narrowed. Results of selective service tests, in-depth studies with specific schools, and other data tend to indicate that the gap is as "great as ever and may, in fact, be widening for some groups" (*Ibid.*, p. 8). Racial and cultural minorities, along with low-income students are "educationally shortchanged sectors of the population" (*Ibid.*, p. 5). With reference to the American Indian, Forbes believes that they are not taught their heritage in schools and face a hostile world which leads to *alienation* and many health problems on a wide scale.

Two useful concepts emerge from the interplay of culture and economics: mainstream and alienation. The latter merits a section-long discussion. The former concept, mainstream, is itself a complex notion involving culture, economics, and probably a sense of assimilation and socialization. Mainstream culture has tended to be a yardstick of success in the literature on bicultural education. Mainstream culture ordinarily connotes the "American dream" fulfilled: a "nice" house in a "nice" suburban neighborhood; middle-class American (usually Anglo) values and lifestyle; standard English language performance; few economic difficulties; and the equivalent of a four-year college degree. Rules, in fact, which reflect mainstream ideas and ways of dealing with the world (i.e., the theory of interaction of deviant cultures with other groups) are found in the assimilating institution, the school, which does its job imposing certain cultural meanings, not the least important of which is "mainstream".

Alienation

Although the term alienation has been used interchangeably with Durkheim's (1897) term anomie (sometimes spelled anomy), it is a word that has been in the English language for several centuries and "is now one of the most difficult words in the language" (Williams, 1976, p. 29).

The relationship between alienation and illiteracy has not been systematically studied. Because the concept of alienation, its effect on learning, and its influence on motivation to participate in the school setting has eluded discussion of how adults learn, it seems imperative to investigate the links alienation may have with adult illiteracy in this country. Culturally different students fail to succeed in school not necessarily because of cognitive differences, lower ability, deprivation, wretched programs, or poor teachers, but rather because they do not want to participate or they do not see school as important in their own lives. It is particularly important to discover whether alienation influences literacy acquisition negatively or positively. Before discussion alienation in the context of the educational environment, however, it is necessary that the difficulty of the concept of alienation be understood.

Some people suggest that alienation is society-wide or naturalized (Murchland, 1971). From this perspective alienation is not an individual nor an ethnic group problem. If alienation is either society-wide or naturalized, then it does not explain why some individuals experience it differently from others.

Alienation has also been discussed as specific to a subculture, as involving isolation or withdrawal, as lack of self-esteem. If alienation is a matter of feelings, or self-esteem, then it naturally follows that the problem of alienation may be solved by affect and mutual understanding.

Other conceptions of alienation stress external factors. While it has definite psychological overtones ("a loss of connection with one's own deepest feelings and needs") (Williams, 1976, p. 32), sociological versions of alienation stress descriptions of a discordant person-environment relationship, the nonparticipation of an individual who is not "rewardingly connected", or a situation in which a person experiences a lack of power. Seeman (1959) classified alienation into five areas: (1) powerlessness--an inability or a feeling of inability to influence the society in which we live; (2) meaninglessness--a feeling of lack of guides for conduct and belief; (3) normlessness--a feeling that illegitimate means are required to meet approved goals; (4) isolation--estrangement from given norms and goals; and (5) self-estrangement--an inability to find genuinely satisfying activities. If alienation is caused by lack of power, lack of rewards, no control, and so forth, it can only be solved by social change on a large scale.

Still another form of alienation involves a survival strategy, indeed a whole lifestyle. In order to survive, low-status individuals withdraw from an environment of failure and stress; they learn to manipulate (and depend on this manipulation) patronage from individuals who in their higher status participate in a faceless mainstream world of competition. Ogbu (1978) expresses this type of alienation best in his treatment of caste barriers in the larger society. He suggests that perception of a "job ceiling"--an upper limit to low-status jobs--leads to different socialization styles based on survival in a low caste economic system. Blocked social mobility and economic rewards force blacks (and other disadvantaged minorities) to rely on white patronage to get jobs and obtain the necessities of life. Dependence and manipulation are skills adaptive to low-status life, and more useful than initiative and competitiveness:

> The type of competence demanded by the generally low social and techno-economic positions occupied by blacks in adult life is associated with linguistic, cognitive, and motivational attributes...different from those of the higher social and techno-economic positions of the white middle class. Thus the personal attributes transmitted to black children in the course of their socialization may be perfectly normal skills required by their position in the caste system, although they are not the types of skills that encourage the white middle class type of school success (Ogbu, 1978, p. 213).

With these points in mind, concerning the range of meanings and views of alienation, the following review will first cover the literature that treats subcultural alienation (when one group de-identifies itself from the larger social group) outside of the educational setting especially as the family may be involved, and then will deal with the perspective of in-school alienation.

The first major contribution to the self-estrangement and powerlessness classifications of alienation was made by Marx who saw, as a product of capitalism, people becoming objects in an economic system. Workers were alienated from nature, from the products of their labor, and from a sense of their own productive activity. Durkheim's (1897) usage of anomy carried the meaning of a combination of meaninglessness and normlessness types of alienation (see Seaman's classification above on p. 31).

Building on these complementary foundations, Blauner (1966), Laing (1967), Urick (1970), Murchland (1971), Rushing (1972), Rosenberg and Bergen (1976), and Rubin (1976) have elaborated additional features and examined various aspects of alienation. Blauner, for example, who developed a model of alienation among these individuals (domination, futility, isolation, and discontent /Blauner, 1966, p. 1/) suggested a four-strand alienation paradigm:

(1) Powerlessness

  (a) separation from means of production and final product

  (b) inability to influence management policies

  (c) lack of control of working conditions

  (d) lack of control over the working process

(2) Meaninglessness--lack of understanding of the purpose of work

(3) Social alienation--lack of feeling of belonging and identification with the group

(4) Self-estrangement--alienation of the innerself or personality in the work situation (p. 16).

Alienation of the personality in the work situation interested Laing (1967), in particular: the "spatialization and quantification of experience or the massive economic irrationality of the whole system" leads to alienation of individuals (p. xv). It is Laing's contention that psychology is based on the study of behavior and not on the study of others' experience, and that understanding others' experience is the key to combatting alienation. (By suggestion, community college staff should try to understand the "inside" view of the student, not limit their observations to outward behavior.)

Urick (1970) describes three aspects of social isolation, as alienation: meaningless (anomia) about one's existence; normlessness--separation from group norms; and powerlessness--lack of control to change conditions. Alienation is common in all aspects of society, but especially among people who are not in the "mainstream"--factory workers, ethnic minorities, poor urban dwellers, young people, hippie dropouts and skid row residents. All these marginal groups are prey to alienation as are consumers and citizens who feel detached from large powerful organizations--business and government and government-managed schools.

Murchland notes that alienation occurs via man's detachment from nature in a bureaucratic, overly mathematical milieu. Alienation is culture-wide in Western society, not merely a problem of minorities or the poor or workers in large organizations. Unlike some others, Murchland's position is somewhat optimistic: "Today increasing numbers are demanding redress of justice...striving for fuller freedom and a more humane existence....There is in the making something like a world coalition of consciences against the forces of alienation" (p. 163).

Nevertheless, alienation may be inherent in social systems. Complex large-scale society (or any society) limits individual freedom, say Rosenberg and Bergen (1976). "Alienation bespeaks a fundamental antinomy between self and culture. In creating social definitions of reality, in prescribing ritual, in establishing institutional forms that differentiate men hierarchically and regulate their relations to one another, men create the basis of their own feelings of non-humanness" (p. 187).

As we have already seen, larger societal factors affect not only alienation but also family life and socialization. Culturally "different" lifestyles may, in fact, be seen as adaptations to poverty within a system that is geared to middle class life. Subcultural socialization and values are useful for survival at the poverty level. Within this subcultural mind-set, school failure is merely one form of withdrawal from mainstream institutions. Alienation is generally out of the control of schools until the larger society allows economically-deprived people access to realizable goals.

In a study of 50 working class families representative of this pattern of alienation--where neither spouse has more than a high school education and the husband works in a "blue collar" job, Rubin (1976) found a pattern of early marriage, stoicism through hardship and traditional value retention of sexual morality and sex roles of spouses. When compared to 25 professional middle class families, working class families had a higher incidence of childhood hardship: 46 percent had families that were "unstable"--alcoholism, divorce, or desertion by parents. The people studied did not blame their parents for drinking or occasional violence because they were aware of the hard life their parents had with poverty and job layoffs. Middle class people blamed mothers for choosing to work while working class interviewees knew their mothers had to. Working class couples married five years earlier than middle class couples (18 and 20 versus 23 and 25), and 40 percent of the women were pregnant when married. Married life dealt with in-law trouble, child rearing by young parents, job problems, and sharp sex role household duties. Small scale life was the norm: vacations were spent close to home, and social life focused on close friends and extended family members only. Church and club attendance was minimal. Parents did not expect that their children would have a much better life than they; at most, they might complete high school and go on to a technical school. The lifestyle included few of the options available to middle class people; and the personal outlook included less self-determined control of the future (powerlessness) and a narrower scale of life. The family was seen as a haven in a tough world.

Other research, that on black socialization, has shown that most blacks live in segregated areas of small towns or in urban ghettos. Middle class blacks tend to have middle class values and live in more integrated housing. Lower class blacks in urban slums face severe poverty and social problems. Newfield (1970) summarizes statistics of life in Bedford-Stuyvesant in 1968:

> Eighty percent of the teenagers high school dropouts. Thirty-six percent of the families headed by women. Twenty-seven percent with annual incomes under $3,000. The highest infant mortality rate in the country. One of the highest homicide rates in the country. And no one has ever counted the rats... (p. 91).

Lincoln (1961) saw the ethnic black subculture as a reaction to prejudice and discrimination. Refused acculturation, blacks had the alternatives of "avoidance, acceptance and aggression" (p. 35). Avoidance was seen as manifest alienation; acceptance was seen as producing inward alienation which manifested itself in aggression. This aggression was often turned inward in the form of intra-group violence and crime. Some of the aggression, however, was channeled into religion and politics in the form of "black power" or Black Muslim religion. Little (1964) provided the definitive description of the factors leading to the development of Black Muslim subculture. Not permitted access to education, he reacted in a not uncommon fashion. As Little explained in his lectures:

> Gentlemen, I finished the eighth grade in Mason, Michigan. My high school was the black ghetto of Roxbury, Massachusetts. My college was in the streets of Harlem, and my master's was taken in prison (p. 286).

Another autobiography (Brown, 1965) unveiled life in Harlem and its special problems where: rural Southern parents raise street-wise urban kids who got into crime and drugs; the family structure consisted of a hard-working mother and a father who felt good when outside the home--in bars, with girlfriends, gambling--to compensate for poor pay and marginal respect by wife and children; street life that interfered with school was important to ghetto youth; and a general attitude of bitterness and alienation pervaded lower class life--bitterness against school, police, employers and mainstream institutions. Leacock (1971) cautioned that the lifestyles described above should not be seen as real beliefs. The attitudes that develop are more to be viewed as adaptations to poverty.

Malcolm X (1964) has given an account of his own orphaned childhood, of doing well in school in a small town, and of moving to the city after being told he should aspire to a low status job because he was a "nigger". His life as a big city hustler and its prestige was seen as preferable to a straight, menial life. Kardiner and Ovesey (1951) describe ghetto flamboyance--fancy dressing, drinking, drugs, and adolescent crime--as adaptations to oppression and low affect at home. The family pattern is of an unemployed father, a working mother, high frustration evident within the family circle, and ambivalent feelings toward the family unit.

Gary (Barnes, 1979) says that social science research on blacks has largely ignored important informal support networks--the extended family, the black churches and voluntary associations, in bars and barbershops. Larriva's (NIE Research Associate) current research on ethnic marriage has shown that both churches and the extended family help cushion the effect of nontraditional family patterns: teenage marriage, unmarried mothers living with parents, living together without marriage. What middle class people see as problems are handled competently within an elastic social system of extended family in black neighborhoods.

The general alienation of youth has been examined by Brown and Van Riper (1973). They feel that a pervasive sense of "loneliness, helplessness and facelessness" causes poor functioning in school" (p. 2). The major causes of alienation of youth are:

(1) an authoritarian view of life so controlled by outside forces;

(2) the development of logic and science and the lessening of anxiety-relieving folk rituals;

(3) Parents are no longer teachers and formal education imparts learning--children are cut off from closeness and developing personal maturity;

(4) The industrial revolution has increased the work week of labor outside the home;

(5) With the emphasis on reason and logic in schools, information increases and busy teachers are distant from too many students;

(6) Radio and television have further blocked communication between parents and children; the companionship of a machine or pre-fab entertainment substitutes for warm interaction with other people;

(7) Changing values have disrupted the goal of seeking a prestigious job or the desire to marry. Competition *per se* is being questioned.

These authors believe that developing self-awareness and self-command by means of communication is vital to combatting youthful alienation.

To some extent, most people in industrialized societies are prey to alienation as a result of increased compartmentalization and categorization and a lessening of communication, affect, and the student *experience* is vital to developing the morale necessary for successful learning.

Cultural Pluralism and School Alienation

Arciniega (1973) has argued that so-called compensatory education programs ought to develop along culturally pluralistic lines, rather than minimizing cultural differences. These programs in the past have largely been failures and Arciniega recommends four assumptions which must be recognized as a first step toward pluralism:

(1) The Chicano's educational problems are not culturally based, that is, Chicano culture is not pathological.

(2) The real limitors of success are those restraint systems imposed upon the subculture.

(3) Research should be focused upon the educational institution as the object of change rather than the student's background.

(4) There is a need to restructure the educational system to reflect what should be in society rather than what is.

Another critic of "multicultural compensatory education programs" is Saville-Troike (1978), who has found that educators generally evidence culture in the classroom by displaying objects or customs from other lands! Within the curriculum, culture is limited to general descriptions of other nations as part of social studies. This is obviously an inadequate perspective for multicultural study. "Culture includes all the rules for appropriate behavior which are learned by people as a result of being members of a group or community, and also the values and beliefs which underline behaviors" (Saville-Troike, 1978, p. 1). To be effective, teachers must have a knowledge of the cultures (or class) from which their students come. This will enable them to understand not only that which is being acquired by the students, but how it relates to what has already been learned. She finds it vitally important that teachers ask several questions:

(1) What are the major stereotypes of each cultural group and how are these affecting student-teacher interaction?

(2) How has the traditional culture changed and how has it been maintained in contact with the dominant culture?

(3) Who is in the family? What is the hierarchy of authority, the rights and responsibilities of the members? What values are placed on individual versus group importance?

(4) What is the life cycle, that is, what are the stages, periods and transitions? What attitudes, expectations and behaviors relate to the life cycle?

(5) What roles are expected and how are they acquired? How do these roles fit the dominant culture?

It is important to distinguish between cultural differences that do not block learning and cultural differences that lead to school failure. Foreign students are culturally different but are not deprived. Poor immigrants choose to come to the U.S., and their children do better in school than long-time Hispanic residents of the U.S. (Ogbu, 1978, p. 235).

The lack of motivation to do well in school due to subcultural alienation cannot be overlooked as a cause of adult illiteracy. Studies note how value differences, small scale versus wide scale lifestyle conflicts and general conditions of poverty and relative deprivation can impact learning. Much of what we consider cultural difference is the survival strategy of poor people from non-European countries who have withdrawn from an environment of failure and stress. Any developmental program must deal with aspects of alienation based on subcultural differences and society-wide alienation. The schools must help students accommodate/survive the tyranny of tradition and lack of choice over their lifestyles that illiteracy and withdrawal engender and the lack of personal contact, anonymity, and job status categorization that is endemic in the larger society characterized by faceless competition. Strategies involving context, cultural knowledge, affect, and patience will surely help. The battle against upper middle class alienation abounds in group therapy; perhaps we should extend this "consciousness raising" into the school system for the less fortunate who lack eloquence necessary to express their alienation.

As the culturally different student leaves his outside community and ventures into the school setting, he finds himself acting out within-school alienation behaviors.

McDermott (1974) has developed a conceptual model which depicts how differing cultures interact and how this may be manifested in schools. He sees a pariah-host relationship between social groups that is achieved rather than ascribed. The pariah status is maintained through a constant interchange in the form of learned behavior which meets the host's expectations. "The host population must be keyed to spotting certain cues, and the pariah population must in some way send off cues which will allow them to be identified and abused" (p. 392). In relation to the school context:

> Once a host teacher treats a child as inadequate, the child will find the teacher oppressive. Often, once a child finds a teacher oppressive, the child will start behaving inadequately. After such a point, relations between the child and the teacher regress--the objectional behavior of each will feed back negatively into the objectional behavior of the other (p. 394). Teachers do not simply ascribe minority children to failure. Nor do minority children simply drag failure along, either genetically or socially, from the previous generation. Rather, it must be worked out in every classroom, every day, by every teacher and every child in their own peculiar ways. When teacher-student communication is complicated by inter-ethnic code differences, regressive relations occur with enough frequency to result in the children forming alternatives to the teacher's organization of the classroom (p. 395).

In other words, students from different ethnic or class cultures run the risk of exclusion from peer groups if they conform to the language and values of the middle class school. The inculcation of school culture would make them outsiders to their own people.

This perspective has developed from the ideas of Bateson (1972) concerning the dual nature of communication; it imparts not only information but also relationship. "...(T)he child defines his relationships with his classmates and teachers. These relations, remember, define the context of whatever information is to be transferred....The wrong message of relationship can result in learning disabilities" (McDermott, 1974, p. 398).

Of the demonstrated high rate of learning disabilities among black children, the author says: "the high rates of disabilities do not point to a high rate of genetic inferiority, neurological damage, language deprivation, or any of the other intrapsychic causes suggested in the social and behavioral science literature. Rather, the high rates of learning disorders point to a learned pattern of selective inattention developed in the politics of everyday life in the classroom" (p. 401). "If the classroom is divided into two separate worlds with teachers and students occupying different ecologies of games, school failure appears to be inevitable" (p. 404).

A system within the school quite clearly reflects the larger society:

> The point here is that the politics of everyday life socially organize the classroom. Ability groupings help a teacher to isolate into accessible units children who are to receive similar messages of relationship from the teacher....What is most interesting is that children seldom reject their assignment...revolt is seldom attempted....The teacher handles the children in a way the children are used to being handled. Politically, the teacher, the children and the child's community are in harmony (*Ibid*., p. 400).
>
> ...Pariah groups are continually regenerated by host and pariah children learning to assign *meanings* to particular social acts and how to *act appropriately* on the basis of the meaning assigned. These meanings are programmed into the *central nervous system* as patterns of *selective attention* to the stimuli particular to some acts and not to others. Patterns of selective attention, glossed in everyday language as *abilities*, *statuses* and *identities* shape a child's *institutional biography* and define whether the child, his abilities, statuses, and identities are to be defined as a pariah or a host group in any situation (*Ibid*., p. 423).

David Rosen (1977) holds similar views. Observing a "multicultural" program, he found it more negative than productive. Ethnocentric stereotypes were used to explain behavior and tc identity individuals. Rosen believes that as long as the social and power relationships within the educational structure remain unaltered, multicultural education will not produce any substantial change. The possibilities of this occurrence are remote if he is correct in asserting that school is a social system in which relations reflect the class variables of the larger society.

Case study support for McDermott's (1974) and D. Rosen's (1977) work comes from Leacock (1971) and Comitas (1967). Both of these researchers found that socially stratified roles were socialized in the school context. McDermott, along with TenHouten, suggests that social behaviors are actually "programmed into the central nervous system." This is very similar to Laughlin and D'Aquili's proposed holographic models (1974, p. 82).

Certainly McDermott's work is not incompatible with the views of Cole *et al*. (1971) and Cole and Scribner (1974). "In the case of learning disabilities, each discipline has assumed that whatever is located in the heads of the children studied is invariable. *Whether the discipline uses a perceptual, cognitive, or language test, a projective technique or a sociometric status score each has assumed that it has described the skills the individual has acquired for all occasions and tasks*. That is, of course, incorrect. Each of these disciplines assumes too much" (p. 403).

McDermott views learning disabilities among minorities as the product of what is learned and not of what is not learned. What is learned is social status and appropriate behaviors. These messages are communicated in the *context* rather than the *content* of the message.

Relating specifically to school alienation, Forbes (1971) says that non-Anglos are assigned to remedial programs as "slow learners". Often they organize themselves into an anti-school cohesive society against language training. A study of Pittsburgh slum children revealed the use of 3,200 words not recognized by teachers or by tests. Forbes' suggestion is that teacher rapport and respect, a knowledge of culturally different life of students, and a curriculum that includes all groups could serve as solutions to student alienation due to monocultural schooling. He advocates the broadening of scale by schools, incorporating local small-scale culture into larger dominated mainstream schools. He notes that the "mono-cultural Anglo-American school is not merely alien to the cultural realities of many regions and communities, but it may well serve as a major cause for tensions that both thwart the educational goals of the school and produce alumni unfit for any culture" (p. 12).

Rudolph (1972) has investigated the stereotypical attitudes of Mexican American and Anglo students at the University of Texas at El Paso. Although stereotyping was evident, his findings revealed that denigration of culturally different students was lowered by increased knowledge of culture. For example, those Anglos who were found to have more positive attitudes toward Mexican Americans had more Spanish language training (of course, these students do not comprise a random sample; they may already have had positive attitudes toward Mexican Americans when they elected to study Spanish). Rudolph, with others, supports the notion of cultural pluralism in the schools.

Sociolinguistics

Cultural pluralism, indeed, linguistic pluralism, has been in the news frequently since U.S. District Judge Charles W. Joiner ruled on July 12, 1979, that a Michican school district "take steps to help its teachers to recognize the home language of the students and to use that knowledge in their attempts to teach reading skills in Standard English" (Austin American-Statesman, Aug. 19, 1979, p. C-5). The order has spawned a great deal of controversy among practitioners, researchers, and journalists, including black syndicated columnist, Carl Rowan, who cautioned:

> For a court to saw that Black English is a "foreign tongue" and requires schools in Ann Arbor or anyplace else to teach ghetto children in Black English would be a tragedy. For that would consign millions of Black children to a linguistic separation that would guarantee that they will never "make it" in the larger U.S. society (Ibid., p. C-5).

There remain many unresolved issues concerning dialectical differences and the relative influence of ethnicity versus social class. Wolfram (1969) presents interesting data about a study which correlated phonological and grammatical variables with status, sex, age, racial isolation, and style of speech of Detroit Negroes. "Social status is the single most important variable correlating with linguistic differences"

(p. 214). This study offered support for the contention of the great importance of sociolinguistic competence. "...(T)he linguistic differentiation correlates more consistently with differences on the education and occupation scale than with residence" (p. 214). "Age also correlates with differences in speech behavior. Adults generally use socially stigmatized variants less than teen-agers and pre-adolescents" (p. 215). Could this be evidence of reactionary adaptation to educational environments? The most clear-cut linguistic boundary was between lower-middle and upper working classes. Such a boundary suggests the importance of sociolinguistic competence.

Baratz (1969) has investigated language use among black children. She described three major positions regarding this question:

> (1) Many are verbally destitute, without a functionally adequate or structurally systematic language code. Sensory/social deprivation conditions are responsible for this situation.
> (2) They have a systematic but underdeveloped language which leads to 'cognitive deficits'. Based upon the Sapir-Whorf hypothesis, it is held that different speech systems can be ranked hierarchically according to abstraction and cognitive complexity.
> (3) There is a fully developed language system which allows abstract thought. However, its differences from the standard English make it a liability in school systems based upon the predominant culture.

Baratz's study suggested that BE goes so far as to interfere with SE production. She did find, however, that content was not actually lost when switching between the two dialects.

Conversely, Labov (1972) has demonstrated that black children may seem unintelligent and nonverbal in a formal, structured interview which they either do not relate to or find threatening. However, in a less formal, more peer-oriented structure, these same children will demonstrate a knowledge of concepts, and literally compete for speaking time. He posits that "the social situation is the most powerful determinant of verbal behavior and that an adult must enter into the right social relation with a child if he wants to find out what a child can do: this is just what many teachers cannot do" (p. 191).

In addition to context, deprivation theorists are bound, almost blinded, by middle class Standard English in their perceptions. Their cultural biases intrude to such an extent that they do not even recognize content-correct responses when expressed in non-standard Negro English. Further, the deprivation theorists cannot recognize that the clarity and parsimony of expression in nonstandard Negro English is often more effective (and to the point) than is Standard English. Indeed, they may be so obsessed by (or restricted to) Standard English form that they are not aware of the real intelligence of the content presented to them. Labov criticizes middle class English as too often being verbose, overparticular and vague.

> The accumulating flow of words buries rather than strikes the target. It is this verbosity which is most

> easily taught and most easily learned, so that words take the place of thought, and nothing can be found behind them (p. 202).

In a study investigating the influence of context, Terrell, Terrell and Golin (1977) found that the identity between race of speaker and race of audience was the primary factor influencing verbal productivity. This seems to support Labov's position.

Gay and Tweney (1976) suggest that blacks are bidialectal in comprehension but not in production of SE. If this is the case, there may be more class factors than ethnic factors involved. Pozner and Saltz (1974), in a study of white students, found very clear breakdowns along social class lines. The major impediment to lower class achievement was found to be in the area of expression; there was no difficulty in understanding tasks, but performance requiring communication was significantly impaired. The authors concluded that, in relation to education, the focus need not be placed so much on the logic of materials but upon the skills necessary to express logic in verbal form. Emphasis on verbal skills is doubly important when it is noted that nonverbal I.Q. was held constant between social classes. Skupas and Tweney (1979) were also able to determine that there were no social class differences in tests of receptive (comprehension) abilities in either black or white subjects. Controlling for both social class and nonverbal intelligence, Genshaft and Hirt (1974) found that there was no difference between blacks and whites in their recall of vocabulary words or sentences in SE.

Distinct from bidialectal considerations is that of bilingualism. Barnett (1977) investigated the psycholinguistic question: "Are bilinguals' language systems stored separately or is semantic information stored as a single system?" (pp. 316-317) "The results support the position that both language and semantic content operate as organizing mechanisms of a bilingual's semantic structure, although language appears to play a second role" (p. 326). "The results also suggest that bilinguals use only one semantic system, rather than two, for processing linguistic information" (p. 327). Barnett concludes that bilingualism should improve and elaborate linguistic skills rather than interfere or hinder them; learning problems are more likely influenced by sociolinguistic considerations than by purely linguistic factors. It has been hypothesized that "linguistic interference" plays a prominent role in bilingual learning problems. Linguistic interference would presumably result from the dualistic nature of the bilingual's semantic structure and structural conflicts of language. According to Barnett's findings, bilinguals appear to use a single semantic organization for both languages, and language is less important than semantic content as organizing mechanisms of semantic structure. This would indicate that, far from being the root of linguistic problems, *multi-lingualism should increase an individual's linguistic skills*. However, the fact that bilinguals have language-oriented learning problems cannot be denied. The problems must relate, then, to appropriate use rather than competence--the sociolinguistic dimension of language.

Some articles report studies generally supporting the contention that bilingualism should improve general linguistic skills. Cummins (1978) concludes that bilingual children showed greater awareness of the arbitrary nature of word-referent relationships and were better able to evaluate contradictory statements than monolingual children. (Word-referent relationships is not a concept but rather it refers to the object of reference as designated by a given word or group of words.) Cummins noted that, theoretically, there are an infinite number of ways to say or refer to anything. Bilinguals seem to practice wider latitude in the way they refer to things while monolinguals seem to believe there is only a single, or limited number of ways of saying something. According to the author, "The results are consistent with Vygotsky's (1962) hypothesis that bilingualism can promote awareness of linguistic operations" (p. 148). MacIntosh and Ornstein (1974), in a survey of teachers of Spanish, have uncovered some fruitful areas for investigation. It was felt that there were few "balanced bilinguals" equally comfortable in English and Spanish. Most teachers felt that their bilingual students spoke neither educated English nor Spanish.

Baugh (1979) would not agree with MacIntosh and Ornstein. In his research he has recorded what he considers remarkable but not a landmark discovery. Speakers made "minor linguistic adjustments" to conform to the unfamiliar or to social situations that demanded formal language. Blacks, for example, would change pronunciation patterns in speaking to strangers--pronouncing the first "r" in "barber", and they would avoid the excessive use of contractions. What did surprise him, however, was that those formalities did not necessarily occur along racial lines. Blacks appeared to adopt more formal speech with strangers, blacks or whites, outside their own neighborhoods. One would have expected that such linguistic adjustment would have been made simply with whites.

McCluskey and Albas (1978) report on cross-cultural variation in sensitivity codes or subcodes commanded by the individual; it is like a vocabulary of different forms of a language (codes). For example, an American high school student might speak internally consistent (patterned) forms of the English language which are different from each other in an English class as opposed to the lunchroom. The use of different codes in different situations is called "code switching". The variety of codes commanded by the individual is his "verbal repertoire". "Domains of language behavior" are the occasions on which one language or variety is habitually employed. Finally, "linguistic routines" are the sequential organizations beyond the sentence. They are not like "modes of thinking." These are, rather, patterned modes of exchange (canned conversation). An example of a linguistic routine would be the: "Hi! How are you?" "I'm fine. How are you?" routine in American English. There are many such routines in any language and frequently they vary between subpopulations. These concepts may be of interest for classroom research.

Richards (1972) commented upon a study focusing on the nature of lasting nonstandard languages. Richards employs the concept "interlanguage" (the approximative system which evolves in the process of language acquisition) and identifies the points at which divergence between the second language and the "interlanguage" arise. Once these points are identified, approaches to teaching the second language could correct particular problems. (The construct "interlanguage" is very straightforward. This is a language system derived from the interaction of two different languages. The implication is that there are three "languages" involved in language learning: the first language of the learner; the target language or language to be learned; and the patterned approximative system of the learner which is different from either the first language or the target. This approximative system is "interlanguage". Study of the characteristics of "interlanguage" provides insight to the particular learning problems the learner might be experiencing.)

Fishman (1972) discussed the treatment of students speaking regional dialects in the German educational system (which uses High German) and the implications of this for the black student in the American system. Fishman points out that dialectal variation is not a function of intelligence, but of social factors. The problem here is to avoid the creation of interlanguage hostilities which interfere with learning. (The interference is not linguistic but social!) Because the individual has already learned one system, he must be capable of learning others if a favorable attitude is maintained. The task is to increase the students' verbal repertoires rather than replace an "incorrect" with a "correct" one. Fishman points out that switching to different varieties is a standard practice in virtually all speech communities, and there is no reason that switching from Black English (or any other variety) to Standard English should cause any particular problem.

Basil Bernstein, the sociologist of education *par excellence*, has attempted to explicate how "different social structures may generate different speech systems of linguistic codes" (Bernstein, 1972, p. 56). He has especially focused on the educational system in general and the family in particular with special emphasis on speech and the regulation of behavior. He distinguishes between language (what it is possible to say) and speech (that which is actually said). All the "possibilities of language" are frequently ignored in favor of *patterns of speech.* At least one element that mediates between language and speech is social structure. Bernstein believes that "every time the child speaks or listens, the social structure of which he is part is reinforced and his social identity is constrained. The social structure becomes for the developing child his psychological reality by the shaping of his acts of speech" (*Ibid*., p. 57). From this point of view Bernstein develops a thesis which posits that there is a fundamental difference between working class speech and middle class speech; that the *use* of the grammatical system and vocabulary differs qualitatively between middle class and working class. These different uses are called linguistic codes, and he he has entitled them *restrictive* and *elaborative*. Harold Rosen has conveniently and dramatically described the differences between these two linguistic codes (Rosen, 1972, p. 5):

> (i) The restricted code is highly predictable since it draws on narrow resources of language. Thus it is rigid, whereas the elaborated code is flexible.
>
> (ii) In the restricted code the speaker has difficulty in verbalizing his intent, while the middle-class speaker finds it easier to verbalize his subjectivity, sociologically, intellectually and affectively.
>
> (iii) The codes give access to different orders of meaning, the restricted code to *particularistic* meanings rooted

> in the here and now, in which principles are never made explicit and therefore not made available to inspection and change; the elaborated code, by contrast, to universalistic meanings which make principles and operations explicit and thus give individuals access to the grounds of their experience--grounds which, therefore, they can change. Unlike the restricted code, the elaborated code makes possible "the liberation of speech from its evoking structure and it can take on an autonomy."
>
> (iv) The concepts, universalistic and particularistic, are linked to two others, context-free and context-bound. The speaker of the restricted code is tied to the immediate situation, with the result that his speech can be understood only by the participants. On the other hand, the elaborated code, freed from this limitation, makes meaning available to all.
>
> (v) The restricted code operates through metaphor and condensed symbols; whereas in the elaborated code, condensed symbol gives way to rationality.

While Bernstein claims to have shown "how the class system acts upon the deep structure of communication in the process of socialization (Bernstein, 1971, p. 187), Harold Rosen disputes that claim "for the simple reason that he never examines the class system" (Rosen, 1972, p.6). ".../Bernstein's work/ is based on an inadequate concept of class which lacks theoretical support" (Ibid., p. 13).

Since many educators have been concerned that minority students have been disporportionately consigned to compensatory education programs, Bernstein's famous quote on compensatory education has been quoted in many sources:

> The concept 'compensatory education' serves to direct attention away from the internal organization and the educational context of the school, and focus our attention upon the families and children. Compensatory education implies that something is lacking in the family, and so in the child, and that as a result the children are unable to benefit from the schools. It follows, then, that the school has to compensate for the something which is missing in the family, and the children become little deficit systems. If only the parents were interested in the goodies we offer; if only they were like middle-class parents, then we could do our job. Once the problem is seen even implicitly in this way it becomes appropriate to coin such terms as 'cultural deprivation' and 'linguistic deprivation'. Then these labels do their own sad work (p. 192).

The labels "restricted" and "elaborated" also do their own sad work, maintains Harold Rosen (Rosen, 1972, p. 15). Rosen, in fact, suggests that Bernstein is criticizing his own work since Bernstein has focused almost exclusively on the family in his analysis. Other early criticisms of Bernstein's work cite his stereotypical view of "working class life in general and its language in particular" and his attribution "to middle class speakers in general certain rare and remarkable intellectual virtues," /without an adequate/ "examination of the way in which their language is affected by their class position" (Rosen, 1972, p. 13).

A more recent critique of Bernstein's work comes out of the neo-Marxist tradition. Apple and Wexler have suggested that Bernstein has attempted to explicate "how the form and content of educational transmissions embody class ideologies" (Apple and Wexler, 1978, p. 35). More simply, they might have suggested that Bernstein was trying to explain how the power structure arranges to represent and have accepted its ideas as the "only rational, universally valid ones" à la Marx himself. Implicit in their critique is the suggestion that community college educators, rather than asking the reading level of culturally different developmental studies students, should be asking questions such as:

(1) Of the knowledge we are transmitting in developmental studies programs, "whose knowledge is it"?

(2) Why is it being taught to them in this way?

(3) What are the real and latent functions in the complex connections between cultural power (literacy, in this case) and the control of modes of production and distribution of goods and services in an advanced industrial economy?

(4) What knowledge is of most worth? To whom?

Apple and Wexler suggest that our educational institutions brainwash students into an insidious type of subservience. The form and content of classroom messages of everyday school life apparently embody ideological transmissions. They view Bernstein's contribution as illuminating how knowledge is distributed (educational transmission). But from this contribution comes one of his greatest weaknesses. Since he is overly concerned with the distribution of knowledge, concrete reality of school and family life is missing. Bernstein's theory, moreover, is static and fails to show interaction of relations between power and knowledge, ideology and culture, and the social interaction between the teacher and the taught. They point out the dichotomous form of analysis used by Bernstein. His analysis, they maintain, ignores the dialectic resulting from historical struggles which provide the current context of school life. The inner contradictions they see Bernstein ignoring are found in the curricular codes and knowledge upon which ideology is based, concrete historical expression of division of labor, and the social interaction within the classroom. They also note that while Bernstein has dealt with elements of the family, schools, and languaging, he has omitted significant artifacts from the suprastructure controlling meaning: television, mass media, museums, films, books, billboards--what London (1972, p. 16) calls the "bread and circus" routine. Bernstein's theory most needs the addition of a theoretical framework of the political economy of formal education together with a theory of justice (Apple and Wexler, 1978, p. 43). They acknowledge that no single scholar can pose all of the important questions concerning what might best be seen as the relation between power and knowledge, and they applaud Bernstein for allowing them and others to "stand on his shoulders." What is needed now, according to Apple and Wexler, is a collective commitment in order that the role "cultural capital" plays in the reproduction of our society may be better understood. From such an understanding, a conceptually and politically profitable collective search might then be made.

As already noted (p. 41), an opposite viewpoint to that of Bernstein is William Labov's. His work intended to debunk the verbal deprivation hypotheses. Its specific focus was upon the black urban culture, and it used field studies to demonstrate both the functionality of nonstandard Negro English and the fallacies of deprivation theorists. In the process of unhinging the verbal deprivationists, Labov also gave Bernstein detractors some strong ammunition. In perhaps his most profound and telling criticism of Bernsteinian-type research, Labov cautioned that "the best we can do to understand the verbal capacities is to study them within the cultural context in which they were developed" (Labov, 1972, p. 201). Labov would undoubtedly agree with Rosen that "the middle class have often to pay a price for the acquisition of certain kinds of transactional language, and that is loss of vitality and expressiveness, and obsession with propriety" (Rosen, 1972, p. 19). This last caveat seems to be a novel argument in favor of pluralism.

Nonverbal Communication

The consideration of pluralism and sociolinguistics leads logically to other aspects of communication. These are greatly influenced by class and culture variables also, and will, in turn, predicate inquiry of how the classroom is both influenced by and influences culture and class. Bateson (1955) has noted that verbal communication has not only verbal content, but also metalinguistic (implicit message) and metacommunicative (relationship of the speaker to the listener) aspects as well. In cross-cultural settings, in a classroom with a teacher of different ethnicity or social class than students, certain assumed metacommunicative devices can be misread. An example is that of joking being taken seriously and vice versa. McCluskey and Albas (1978) have performed a study of the double-bind hypothesis (verbal content contradicted by metalinguistic content) which shows the cultural differences in reaction to such phenomena. Canadian and Mexican children were shown a tape of an actress expressing one message with verbal content, but contradicting this message by tone and inflection. Mexican children were found to view this situation with significantly more negativity.

Henry (1960) was also aware of this situation, and discussed it in relation to values and control of knowledge. ".../E/ducation...occurs always in a context of values, and teachers are usually teaching values by implication, regardless of the immediate subject matter" (p. 273). However, "...a teacher's own unconscious behavior may contradict the values he is attempting to teach..." (p. 274).

Conclusions

The sociocultural variables encountered in the "outside" context of a culturally different student's reality clearly influence his persistence and achievement in educational programs. When those variables work against social change (e.g., improving the social and economic prospects of certain groups), educational reform becomes a rhetorical rather than a realizable goal.

Of the difficulties facing change in education Henry posits:

> In the history of Western civilization, new knowledge was a threat to traditional status relationships, whether between classes or between sexes, and the fear of this remains. For this reason a prime effort in Western civilization has been to tame new knowledge and direct it in such a way that it would strengthen the traditional social structure rather than unhinge it (p. 292).

In the face of such resistance, some groups have reverted to over-maintenance of their ethnicity. A hazard of this is the limiting of information.

> ...an open-class system inundated with knowledge allows scholarship and economic exploit to create new status groups to manipulate the new knowledge....We may say that (1) knowledge circulates among social-status groups more readily in open social-status systems than in closed social-status systems, and (2) new intellectual horizons are revealed more readily in open social-status systems than in closed social-status systems (p. 292). ...The issue in the study of discontinuities in education, then, is to discover whether there are critical areas of knowledge from which children are deliberately excluded by adults (p. 293).

That this does occur is manifested by a recent court decision. On August 2, 1979, U.S. District Court Judge George Pratt upheld the decision of the Island Trees School Board, Long Island, New York, that banned "filthy" books from school library shelves. Among those books were Bernard Malamud's Pulitizer Prize winner, The Fixer, Eldridge Cleaver's Soul on Ice, Slaughterhouse Five by Kurt Vonnegut, and Black Boy by Richard Wright.

> When the exclusion factor affects whole groups of adults, we get differentiation in the social structure. It would appear, therefore, that the exclusion factor has social-structure-relevance. We infer from this that the persistence of exclusion must have as its function the prevention of social change (p. 293).

It is held by some that there are indeed significant changes being made, and that enrollments of minority students are increasing. Forbes (1971) takes issue with this position, arguing that results do not bear out the contentions:

> Thus we may assert that, while minority students are now being exposed to a year or two of schooling more than were their parents, it is questionable that the educational gap has...been narrowed. Results of Selective Service tests, in-depth studies of specific schools, and other data not cited here would tend to indicate that the "gap" is as great as ever and may, in fact, be widening for some groups (p. 9).

Indeed, if the gap is widening (and it appears to be the case), then it seems reasonable that more than sociolinguistic theory and conceptual models of alienation, ethnicity, and culture/class relationships are necessary to increase the advantage of the least advantaged. While sociocultural explanations have provided provocative hypotheses for educational inequities and literacy problems, they have not been sufficient for the collective search dreamed of by Apple and Wexler (1978). Nor have these explanations taken a form of synthesizing within-group differences. To close the gap--to master the relationship between language and thought and culture and literacy--will require all the multidisciplinary arsenal we can muster. It will, in fact, demand a totally new approach. What neuroscientists have learned in the last couple of decades about the brain holds great promise for those concerned about adult illiteracy. The following chapter will illustrate how the internal neurological (psychophysiological) functions influence cognitive development and will suggest how these ideas may prove useful in literacy acquisition theory building.

Chapter III

THE INNER CONTEXT

Social science has increased our knowledge of the world surrounding the adult semiliterate, yet little is known about that world within the individual. Still, the repertoire developed by neuroscience within the last generation has begun to illuminate the complexity and resourcefulness of the mind's inner-world. The promise this holds for adult literacy development is attended to by many brain scientists who are now urging educators to consider recent findings (Chall and Mirsky, 1978; Bogen, 1975; Hart, 1978; Brazier, 1975; Livingston, 1975; Read, 1975).

If the cognitive processing of preliterates and semiliterates differs markedly from the mainstream literate norm, as Luria (1976) and others have suggested, the most sophisticated thrust based on assumptions derived from traditional learning theory and conventional educational practices, no matter how highly refined those assumptions are, may have minimal impact. Therefore, it seems imperative to discover if and how semiliterates differ, and to suggest educational experiences which can accommodate these differences and move these individuals toward literacy.

If it can be assumed that being literate is dependent upon basic skills development, it must be accepted that reading is one of the most fundamental of these skills. Since the ease or difficulty of learning to read has been linked with laterality, hemispheric preference and cognitive strategies (Biersner, 1976; Marcel, Katz, and Smith, 1974; Marcel and Rajan, 1975; Moskovitz, 1974; Coltheart et al., 1975), it is essential that adult literacy instructors become aware of the relationships surrounding cognitive processing. In so doing, they can take into account the necessary variability of programs which can encompass differences in learner characteristics.

One of the most attractive theories for investigating such differences is hemispheric specialization theory, which postulates that the two cerebral hemispheres of the brain specialize in different cognitive functions. This particular approach to studying literacy acquisition, however, has eluded discussion in research on literacy development in culturally different students. It is possible that this particular theory, or modifications of it, may bear centrally on intelligent program design and teaching strategies.

Hemispheric Specialization Theory

Over the last decade, neuroscientists have garnered knowledge which now appears to contain significant implications for those responsible for student learning. Their findings suggest not only that the hemispheres of the brain specialize in their processing of information and in their learning and problem solving strategies, but also that some learners are more dependent on one type of processing than another.

Hemispheric specialization theory, the conceptual framework which undergirds research on localization of brain function, has been corroborated through repeated experiments on split-brain patients and stroke victims. Using various techniques (electroencephalographs, radioisotopes, sodium amytal injections, tachistoscopes, gaze shifts, dichotic listening devices, to name the most prominent), researchers have suggested that the left hemisphere in most individuals not only specializes in language function, but it also performs linear, analytical, algorithmic, sequential, temporal and logical computations. It seeks out details rather than perceiving wholes.

The right hemisphere, in most people, appears to specialize in synthesis, nonlinear, holistic, and gestalt-like functions. Its forte is images, pictures, faces, spatial and holistic patterns. Nonverbal tasks, music, art, the humanistic/mystical part of civilization may have their roots in this hemisphere (Ornstein, 1972; Zaidel and Sperry, 1973; Bogen, 1975; Bry, 1978).

The division of function, however, may not be quite as clear cut as the above dichotomy suggests. Swedish scientists have found, for example, that the right hemisphere is much more involved during speech than previous research on tissue-damaged patients has indicated (Lassen et al., 1978). In addition, the validity of the EEG technique for measuring cognitive functioning has been questioned (Gevins et al., 1979), and the unitary nature of each function has also come under fire (Gazzaniga and Le Doux, 1978).

The picture is yet incomplete and discovering a biological confirmation of some successful programmatic components would assure many practitioners that their policies and practices are favorably directed.

There is growing, but still inconclusive, evidence that learner differences in hemispheric processing exist (Samples, 1976; Wheatley, 1977, 1978; Luria, 1976). The nature and meaning of these differences, however, is uncertain. Several authors have speculated that social class and cultural background, rather than ethnicity, influence cognitive processing and learning strategies, and that socioeconomic differences may be better understood in the light of hemispheric specialization theory (TenHouten, 1976; Luria, 1976; Wheatley et al., 1978). One investigator (Wheatley, 1977) asserted that

> ...the urban poor tend to be right-hemisphere oriented while middle-class persons are more left-hemisphere oriented. If this is true, then it would explain why many urban poor do not succeed in our schools and why they claim irrelevancy of many of the tasks asked of them in school (Wheatley, 1977, p. 16).

At this point, an historical summary of the evolution of hemispheric specialization theory and research will be instructive for an understanding of the ways in which certain findings can be brought to bear on practical problems of administering literacy campaigns.

Origins

Dr. Paul Broca typically receives the credit for fathering the theory of hemispheric specialization with his presentation of a lesioned brain to the Paris Anthropological Society in 1861 (Broca, 1861, 1863).

He correlated *speech* difficulty following a stroke with the lesion in the *left* hemisphere of the brain of one of his patients. In 1881, a young German neurologist, Carl Wernicke, postulated a *posterior* speech area in the left hemisphere, later to be called "Wernicke's area", which, when damaged, impaired comprehension but left spontaneous speech intact. A different region, called "Broca's area", reversed the clinical picture.

A dispute between the "localizers" and the "holists" (who saw the brain as a single integrated unit without functions located in discrete regions of the brain) lasted from about 1906 with Pierre Marie's new theory of holism until the middle Fifties when the American behaviorist school led by Karl Lashley claimed the brain to be equipotential (Gardner, 1975, pp. 24-25, 92, 93).

Even as the behaviorists were advancing their claims, however, neurosurgeon Roger Sperry and his colleagues, Michael Gazzaniga and Jere Levy-Agresti, were laying the groundwork for a revolution in the investigation of hemispheric functions by treating victims of a severe form of epilepsy with what has come to be known as a split-brain operation. These operations, called commisurotomies, disconnected the two hemispheres by severing the *corpus callosum*, a bundle of nerve fibers and axons which relays information back and forth between left and right hemispheres. Split-brain operations performed by surgeons Philip Vogel and Joseph Bogen in the early 1960's provided dramatic demonstrations of the differences in function between the left and right hemispheres.

Language and the Brain

By 1972, Broca's century-old contribution regained favor. What was new, however, was the confirmation that in most (but not all) of the cases of language disorder based on brain damage, the damage was located in the left hemisphere: "only rarely does damage to the right hemisphere lead to language disorder" (Geschwind, 1972, p. 76). Harvard Medical School's Norman Geschwind, in fact, dispelled the belief that the two hemispheres were symmetrical in structure. The hemisphere's *planum temporale*, an extension of Wernicke's area, "was larger on the left side of the brain in 65 percent of the /100/ cases /he tested/, equal in 24, and larger on the right side in 11 percent" (Geschwind, 1972, p. 92). Wada had earlier confirmed these findings on the basis of dead infant brains suggesting that asymmetry may be genetically determined (Wada, 1960).

In 1937, Dr. Samuel T. Orton published his *Reading, Writing and Speech Problems in Children* (Orton, 1937), which described his conceptualization of left hemispheric "ascendancy" in good readers.

In the Netherlands, Dirk J. Bakker, building on Orton's conceptualization, developed a stage-dependent model for learning to read based on between-ear difference measures (Bakker, 1972). He used the dichotic listening technique invented by Broadbent (1954) and improved by Kimura (1961) to indicate hemispheric specialization. In the first stage Bakker speculated that children needed right hemisphere specializations for spatial learning, in the second stage they needed bilateral processing, and in the last stage--where fluent reading took place--maximum specialization of the left hemisphere was imperative (Bakker, 1972, pp. 17-18).

In 1973 Karl Pribram of Stanford University and Alexander Luria of the University of Moscow edited Psychophysiology of the Frontal Lobes (Pribram and Luria, 1973). Luria's particular interest was the relationship of the frontal lobe to the hemispheres. He believed that a mere dichotomy of left and right hemispheres was insufficient for understanding how the brain functions. For him, the frontal lobes are the sites of "higher intelligence, of satisfaction from art and literature and of spiritual understanding. The frontal lobes, in essence, integrate both sides of the brain in a union making possible not only past experience, memory storage, and the processing of sensory information (which takes place in the two hemispheres), but also allow the individual to plan for the future, a capacity no other species shares" (Goodman, 1978, p. 49). In summarizing thirty years of research on the functional system of localization, Luria states that

> ...the frontal lobes play an essential part in the higher forms of regulating the stages of activity...we know that there exists a distinct division of function between the frontal parts of the dominant (left) and subdominant (right) hemisphere, and that unilateral lesions lead to the emergence of different syndromes: in some cases lesions cause a disturbance of the programs of verbal thought and in others a disturbance of emotions.

It is unfortunate for the present investigation that he did not provide information on the literacy levels or cultural/ethnic backgrounds of his subjects.

Another important study appeared in 1973--Kinsbourne's attentional control model of cognitive processes. Marcel Kinsbourne, a Canadian Professor of Pediatrics, studied the control of attention by interaction between the two hemispheres. His model suggests ways to influence the encoding of information. If, as a child matured, his nervous system became more flexible, it would allow its owner some leeway in directing his attention. Inborn attentional biases could be overcome by "cortical influence". Situational factors and cognitive variables such as "mental set, expectancy, and previous experience influence the manner in which stimuli are interpreted and processed" in the brain (Kinsbourne and Hiscock, 1978, p. 201).

In 1974, several interesting developments occurred. Cautious speculations were made that hemispheric specialization might be tied to socioeconomic class (Dorman and Geffner, 1974). Cole and Scribner, in Culture and Thought, posited a relationship between functional cognitive systems and culture, an embryonic theory of culture and cognition, though at the time their conceptualization of higher mental processes had more in common with psychology than with neurology. Two new techniques for measuring cerebral processes were initiated: (1) gaze shifts, where the direction the eyes moved during speech was supposed to indicate that the opposite hemisphere was engaged (Kinsbourne, 1978) and (2) phrenoblysis, the measurement of brain growth (Epstein, 1974). Furthermore, T. Marcel demonstrated that poor readers are significantly worse than better readers at correctly identifying words presented to the left hemisphere (Marcel et al., 1974, 1975).

Another theoretical perspective is that of Laughlin and D'Aquili in their bold Biogenetic Structuralism (1974), based in part on hemispheric specialization, although much grander in scope than other contemporary publications dealing with brain structure. Theoretically, in terms of the mental manipulation of the information and structures necessary, all human beings should be capable of acquiring literacy just as they are capable of learning spoken language. Laughlin and D'Aquili synthesized the available data from neurophysiology, anthropology, ethology, and related fields into a theory of human mental structure and functioning which they termed "biogenetic structuralism". The major ontological assumption of this body of theory is that "there exists no reality intervening between the central nervous system and the environment" (Laughlin and D'Aquili, 1974, p. 11). A major implication of this assumption is that the basic concepts upon which the humanities, social and behavioral sciences are founded (e.g., "culture", "society", "personality" or "mind") have analytical status only: they refer to patterns abstracted from internal brain processes.

It is the evolution of the efficient functioning of sophisticated associational activities which has made the human brain distinct. Certain of these association systems are responsible for the human capacity to learn and manipulate information and are common to the species. The visual-limbic system associates visual perception and emotion (Geschwind, 1965). Visual association with the limbic system is responsible for most conditioned learning (Laughlin and D'Aquili, 1974, p. 50). It is this emotional investment in perception of the environment which underlies motivated activity.

In the inferior parietal lobe of the human brain, structures direct cross-modal association of visual, auditory and somaesthetic association areas resulting in the human capacity to learn not being completely bound to the limbic system (Geschwind, 1965). (This would indicate that traditional learning theory is much too simplistic to account for all learning processes occurring in the human animal.) Cross-modal association in the inferior parietal lobe is the neurophysiological basis of the process of categorization (conceptualization), very important in language development (Geschwind, 1965; Holloway, 1968; D'Aquili, 1972).

Speech involves the verbal auditory association area (Wernicke's area) and the motor speech area (Broca's area) and their direct connection via the arcuate fasciculus (Cooper et al., 1958). Every verbal input, once it reaches Wernicke's area, follows two paths: one directly to Broca's area (there to result in automatic utterances unless inhibited by other mechanisms), and one to the inferior parietal lobe where multiple associations take place. The interaction of this system may be conceived as "internal language" with complex associational structure resulting in an intricate pattern of inhibition and/or stimulation between associated areas of the brain (Laughlin and D'Aquili, 1974, p. 57).

Due to the cross-modal transfer and association characteristic of the human brain, it would appear that learning is clearly a more complex phenomena in man than traditional learning theory would lead one to suppose. Because man is able to associate information derived from two or more sense modalities, what are in effect composite models are generated independent of any particular sense modality. Further, man is able to acquire and modify models independent of the limbic-reticular system...

that is, in the absence of immediate external positive or negative reinforcement.

The slow evolutionary process which resulted in the uniquely human brain involved the gradual cognitive extension of prehension--the ability to associate events and objects outside the immediate sensory field. This process resulted in: the expansion of reality (behavior) controlled by models and the emergence of the "self-other" dichotomy (awareness). With the expansion of models, individual associations began to have less and less adaptive importance. Much that we view as social behavior, cultural values, et cetera, stems from models having for the most part no adaptive importance for the species. This is a major source of human variation.

Human variation does exist whether it is adaptive or not. It is phenotypic and thus dependent on natural selection, genes and the environment. Groups then evolve in such ways that they indeed do adapt to various environments. Wilson (1975) claims that homo sapiens is the most varied of all species.

A major contention of biogenetic structuralism is that models of reality and the channels through which they are judged for "fit" are all comprised of real neuroanatomical material, and only such material. Sensory input is processed in different ways depending upon the degree to which the input "fits" pre-existing models. Most neurognostic structures probably involve extremely complex synaptic relationships over wide cerebral areas--a field of neuroanatomical pathways. What distinguishes one structure from another is the total field of neural connections, not particular cells, cell bundles, et cetera.

That which is known of motor structures implies that in addition to learned skill activity ("motor engrams"), certain motor skills, walking, for example, are activated by progressive maturation of the central nervous system. Thus, although learning may be involved in the ability to walk, it appears, for the most part, that a built-in (genetically determined) engram (structure) is being activated with the progressive myelinization of motor areas and tracts.

Laughlin and D'Aquili propose that sensory analogues to the inherited motor engrams also exist: that there are certain structures underlying cognition, certain models of reality genetically determined such as the human ability to "conceptualize" or "abstract".

The evidence for this hypothesis is drawn from psychology, anthropology, ethology, learning theory and linguistics. Jung, before the turn of the century, noted the latent disposition towards identical reactions in the species. Levi-Strauss and his students have explored the universal human tendency to order things as opposites ("binary opposition"). The work of Chomsky has been significant for the revelation of the deep (and universal) structure of human language. From ethology, the concept of "preparedness" (the ability of certain species to learn specific tasks much more rapidly than is possible according to the laws of learning) suggests the existence of neurognostic structures. Laboratory experiments have suggested to many learning theorists that reinforcement is not necessary for all learning, knowing, and thinking.

Perhaps most provocative of Laughlin and D'Aquili's hypotheses in considering innate human capacities derived from brain structure is that inductive-deductive alternation (the process of "sciencing") is a biolog-

ical process representing the empirical feedback system of the Empirical *Modification* Cycle. Inductive-deductive alternation is a continuum of inquiry by means of which information is processed by the brain and neural (holographic) models are refined. All men, everywhere, theorize to *some degree*. This is not to say that they theorize *alike* or to the *same* degree. While there seem to be universals such as linguistic universals regarding color categories, for example, languages do change in response to certain variables (i.e., increased social complexity) (Laughlin and D'Aquili, 1974, p. 55).

In 1975 several important works about the brain were published. Mary A. Brazier's *Growth and Development of the Brain: Nutritional, Genetic, and Environmental Factors*; Timothy J. Teyler's *A Primer of Psychobiology* (1975), which provides a background on the physiology of the human brain in layman's parlance; and Howard Gardner's *The Shattered Mind: The Person after Brain Damage* (1975). Gardner's work provides more history on the evolution of the brain sciences than any other work yet encountered; and based on implications Gardner drew from his own experience as a clinician, it *displays* brain function in both normal people and stroke victims. His later thinking about cognition and the arts also impacts a neurosociological model of literacy development (Gardner, in Madeja, 1977).

Brazier's collection of works on the impact of nutrition on brain growth and cognitive development has important implications for literacy acquisition. Such research has provided evidence that nearly 60 percent of all pregnant women living below the poverty level in the United States are "consuming calories at such a low level that brain development in their unborn children will likely be deficient" (Livingston *et al*., 1975, p. 388). Higher income levels are not exempt from this brain growth *in utero* problem either: "Forty-four percent of the pregnant women at two to three times the poverty level are at similar risk" (*Ibid*.).

Further complicating the problem of malnutrition and brain growth is the fact that even *after* birth some 18 percent of infants and children in poverty income levels "are in jeopardy for brain development" and between nine and eleven percent of those in higher income classes are similarly affected" (*Ibid*., p. 390). If these figures are accurate, then it is quite possible that some adult semiliterate students from low economic backgrounds may have sustained severe nutritional deprivation either pre- or post-natally, or worse, both.

If it is true, as some brain researchers have speculated, that originally the right and left hemispheres have spatial abilities and that as language is acquired the spatial abilities in the left hemisphere diminish, right hemisphere preference in low-achieving students may be attributable to left hemisphere inefficiency caused by undernutrition. That is, if malnutrition stymies the development of language in the cerebral cortex, then it is not difficult to understand how some adult students have so great a number of difficulties in learning to read.

Not only would cognitive development and especially hemisphere specialization for language be affected, but the motivation for learning and for intellectual or social curiosity might also be jeopardized, becoming a successive problem generation after generation. One researcher commented tersely:

> The undernourished child himself is less active and less demanding of parents, siblings, and peers, thereby contributing to his own retarded development and worsening nutritional status. Thus malnutrition (and its concomitant of increased infection), inability, and disinterest form a vicious cycle, which retards behavioral development, perhaps permanently (Read, 1975, p. 347).

Another body of literature suggests that nutrition may influence cognitive style. Dawson (1972) has proposed that differential levels of protein intake may affect the sex hormone balance (testosterone/estrogen) which in turn appears, in his study, to be related to differential levels of field independence. Those with low protein levels (in the extreme case, those with kwashiorkor) tend to have lower androgyn levels and lower levels of psychological differentiation. In terms of the ecocultural model (Berry, 1976), hunters whose adaptation requires a field-independent cognitive style tend to obtain high levels of protein; in contrast, agriculturalists, whose adaptation does not require field independence, tend to obtain lower levels of protein (and, on a worldwide basis, tend to suffer more kwashiorkor). If further research confirms a hormonal link to cognitive style then such a link may be viewed as yet another functional adaptation between ecological setting and behavioral development.

Ingvar and Lassen's (1975) volume on regional cerebral blood flow reported on a new technique for measuring brain function during various kinds of cognitive and emotional tasks. After a subject's carotid artery had been injected with Xenon 133, an on-line computer measured (through special detectors attached laterally to the hemispheres) the coupling of function, metabolism, and blood flow within up to 64 regions of the brain. The average flow was then transformed into graphic display illustrating that "cerebral blood flow changed dramatically from rest to pain, to reading, speech, problem solving" (Ingvar and Lassen, 1975, p. 409). Ingvar confirmed what Luria had suspected--that the frontal lobes were the location of "higher thinking", "mental activation with abstract thinking appeared mainly to activate the association areas of the cortex in the frontal lobes and also postcentrally," that speech and reading activated the regions long recognized as speech centers, and that the blood flow did not necessarily correlate with performance but rather "to degree of *motivation* manifested, or experienced by the subject" (*Ibid*., pp. 406, 410). Moreover, Ingvar found that the *left* hemisphere was especially involved during abstract thinking, memorizing, and problem solving" (*Ibid*., p. 405, our italics).

Using the same radioisotope technique, Carmon, Lavy, Gordon and Portnoy (1975) found that "listening to music passages was accompanied by an increase of rCBF (regional cerebral blood flow) in each hemisphere but much more evident in the *right*" (Ibid., p. 417, our italics). Such findings suggest that there is interaction between the hemispheres and that speculations concerning single activation of one hemisphere at a time are erroneous.

In the same year (1975), the prominent neurosurgeon of split-brain operations, Dr. Joseph Bogen, published "Some Educational Aspects of Hemispheric Specialization" in which he suggested that our Western civilization

--in its preoccupation with science, technology, and commerce--has concerned itself with an intensive concentration on left-hemisphere functioning. With its emphasis on verbal, analytical, sequential "basics" ignoring essentially the intuitive, holistic, spatial, imaginative side of the brain, our educational theory and practice have reflected a technocratic left-brain orientation, an educational imbalance. Specifically, Bogen took this view:

> If our society has overemphasized propositionality (left hemisphericity) at the expense of appositionality (right hemisphericity), more is involved than the adjustment difficulties of isolated individuals. It means that the entire student body is being educated lopsidedly. Have not certain pedagogic policies often tended to aggravate and prolong this sidedness?(1975, p. 29)

Neurosociological Links

By 1976, research on hemispheric specialization had reached into many disciplines. Education Index for the first time included the subject heading, "Brain--Localization of Function." The evolving theory was proving useful for explaining and predicting how different people, even people of different cultures, thought and behaved. And Orton's ideas regained interest. Mackworth (1976) postulated that both sides of the brain were used in reading.

A sophisticated view of the social implications of hemispheric specialization was advanced by UCLA Sociology Professor Warren TenHouten, who posited a neurosociological corollary (to the hemispheric specialization theory) which illustrates a "relationship between the propositional, appositional and dialectical modes of thought and position in the structure of social dominance" (1976, p. 504). Proficiency in verbal/analytic/left hemispheric processes may correlate highly and positively with socioeconomic status in industrial societies. He hypothesizes that dominant classes and groups "appropriate the propositional mode of thought" (abstract, logical, systematic, instrumental, manipulative) while "dominated groups and classes are hypothesized to be comparatively appositional" (essentially right-hemisphere oriented) (Ibid., p. 504). TenHouten believes that the right hemisphere is dominant culturally in the groups he has studied, the Hopi Indians, Eskimos, and blacks. The dialectical mode seems analogous with frontal lobe functioning.

While TenHouten cited Luria's earlier work on the frontal lobes, he did not mention Luria's Cognitive Development: Its Cultural and Social Foundations. The parallels in their thinking, however, are uncanny. Luria's Cognitive Development is probably one of the most important multidisciplinary investigations ever published. Although it predated cross-cultural psychology and cognitive anthropology/sociology, its methods, its graphic-functional and categorical theory, and many of its findings are congruent with the latest developments in the neurosciences. The cognitive shifts he observed in the larger sociohistorical context parallel neuroplasticity in the individual, the study in which Luria was deeply immersed. His approach suggests an extrapolation from his knowledge of individual cognitive processes to the larger cultural context.

He interpreted the phenomenon of cognitive shifts as "the creation of new motives that take shape in the process of collectivized labor, the joint *planning* of labor activity, and basic schooling (*Ibid*., p. 162, our italics). He particularly was struck by the ascendency of motives which went beyond the graphic-functional experience as one's own labor... *future planning*, the interests of the collective, and, finally, a number of important cultural topics that are closely associated with achievement of literacy and assimilation of theoretical knowledge" (*Ibid*., our italics). Remember that, for Luria, the frontal lobe allows the individual to *plan for the future*, so that these shifts in cognitive processes associated with new planning motives within the sociohistorical context (that is, within the cultural system) are analogous to system localization of function or hemispheric specialization in the brain.

The analogy of sociohistorical shapings of mental processes in a cultural situation to functional systems in the human brain suggests that Luria's graphic-functional term appears to be a misnomer. Etymologically, the word "graphic" derives from the Greek word meaning "to write", and since the peasants Luria described as graphic-functional were illiterate for the most part, perhaps another term would be more appropriate. According to the editor, Luria's term "graphic-functional" refers to activity guided by the physical features of objects that the individual works with in practical circumstances (p. 15). Throughout his study Luria contrasts "graphic-functional" with "abstract-categorical". In light of hemispheric specialization theory and TenHouten's hypothesis concerning "propositional" and "appositional" modes of thought, we read Luria's terminology as merely a convenient way for him to express left and right hemispheric processing. He hypothesized that people "with a primarily graphic-functional reflection of reality would show a different system of mental process from people with a predominantly abstract, verbal, and logical approach to reality" (p. 18). His experiments with perception clearly showed that optical illusions are not universal. They were instead "linked to complex psychological processes that vary in accordance with sociohistorical development" (p. 43). Again we saw the cultural and historical conditioning of mental processes: the more education people had, the less visual (right hemisphere specialization) acuity they had when confronted with optical illusions. His data showed that "perceptual processes hitherto regarded as purely physiological (and thus universal) are influenced by sociohistorical development" (p. 45 and Table 6, p. 44). He might have made a similar comment about cognitive process.

In Luria's experiments on generalization and abstraction the right and left hemispheric processes again seemed to play a critical role. "There is no question that the transition from situational to taxonomic conceptual thinking is related to a fundamental change in the type of activity one engages in" (p. 52). Concrete situational thinking fits the descriptions given earlier for the right hemisphere's specialization. Categorical or taxonomic systematization implies left brain sequential, analytical, verbal and logical thinking (p. 48). Clearly, the terms are less important than the theoretical implications of Luria's work.

Recent Developments--Some Caveats

Shortly after Luria's work was translated into English, a timely volume, Education and the Brain, was published by the National Society for the Study of Education. "An overview of current scholarship in the neurosciences that has implications for educational theory, research, and practice" (NSSE, 1978, p. xiii), this publication contains much information relevant to literacy development. Chapters by Wittrock, Kinsbourne and Hiscock, Epstein, and Chall and Mirsky are particularly provocative.

For example, Merlin C. Wittrock, Professor of Educational Psychology at UCLA, draws an analogy of Aristotle's memory model (images and sequences) to the present day conception of the encoding of information in the left and right hemispheres. He points out that the hemispheres differ in the strategies (rather than in a coding process), and "perhaps somewhat in the type of information they process" (1978, p. 73). He stresses the dangers of using terms like "cerebral dominance", because "with the exception of the reproduction of speech, depending upon the type of problem or the appropriate strategy, either hemisphere may dominate the processing, or both of them may be involved in it. It is more precise to imply hemispheric lateralization of a given function, than it is accurate to imply that the same hemisphere is dominant for all functions" (p. 68).

Wittrock's major contribution is the suggestion for teaching left hemisphere (verbal) skills through the stimulation of the right hemisphere. With normal learners, Wittrock believes that strategies which "elaborate verbal information in synthetic spatial or imagery strategy can facilitate memory" (p. 75). Another insight he furnishes educators is that "the hemispheric functions of the brain are distinguished more by the way they organize or represent information than by the type of information they organize" (p. 75, our italics).

Coming into close agreement with TenHouten and Wheatley, Wittrock also posits that different strategies are learned in different social classes. He makes an iconoclastic interpretation of brain research findings which relates to strategies as well as current educational practice: repetition and reinforcement may bore the student, even turn him off (p. 82)! He goes on to implicate programmed instruction (implicitly) in student failure: "The organized multivariate reality constructed by the brain is far more sophisticated than the one some recent simplistic instructional materials were designed to accommodate" (p. 100).

In Chapter VI of Education and the Brain, "Cerebral Lateralization and Cognitive Development," Canadians Marcel Kinsbourne (Professor of Pediatrics and Psychology at the University of Toronto and the University of Waterloo) and Merrill Hiscock (Assistant Professor of Psychology and Clinical Instruction in Psychiatry at the University of Saskatchewan) contribute substantially to our better understanding of literacy and reading. They attempt to put into proper perspective the question of whether reading ability and cerebral lateralization are linked. Kinsbourne's attentional model (described on p. 53) may be vital in developing good instructional programs. The authors maintain that attentional strategies and various situational variables contribute to cognitive ability--not "deviant progressive lateralization" (p. 221, our italics).

Because they believe that "brain function is lateralized from birth, if not earlier, and that language does not become increasingly lateralized as the child matures" (p. 220), they painstakingly distinguish between the concept of delayed left-hemisphere maturation, which may be one component of general developmental delay, and the concept of delayed (or incomplete) lateralization:

> ...delayed lateralization implies only that the language processor is spread thin across both hemispheres, but there is no necessary implication with respect to how efficiently it functions. Delayed left-hemisphere is deficient; there is no implication that language processing is being accomplished elsewhere in the brain (p. 221).

The concept of delayed left-hemisphere maturation may well find itself a comfortable niche in an evolving neurosociological theory of literacy development.

Professor Herman Epstein of the Biology Department at Brandeis University postulated, in Education and the Brain, a model of brain development which encompasses growth spurts during the age intervals of 3-10 months, 2-4 years, 6-8 years, 10-12 years, and 14-16 or 17 years with "putative 'fallow' periods," or plateaus, in the intervening years. While Epstein's model correlates closely with Piaget's classical stages of intellectual development (except that the 14-16 year stage has no Piagetian counterpart), at first it leaves those interested in adult brain growth (or degeneration?) somewhat in a quandary. During plateau periods, Epstein's own best guess is that:

> ...the child should be exposed to large amounts of information and to a wide variety of direct experiences with nature, science, people, and work, all from the point of view of enlarging his direct experience base and avoiding much pressure for elaborate inferences about the natures and interrelationships of such experiences. Furthermore, these would be periods for perfecting the long neglected memorization skills involved in learning of poetry and songs, of the important facts of history, the facts of geography of the nation and of the whole earth, of health science periods we could also help children increase their skills in already initiated competencies (p. 364).

Epstein recommends the running of an "intensive tutoring trial in parallel with the direct experiment in order to learn which paradigm best accords with nature's designs" (p. 365).

In summarizing the implications of brain research for education, Chall and Mirsky state four themes:

(1) the importance of an enriched environment or "environmental stimulation" in the development of brain growth (NSSE, 1978, p. 371);

(2) the importance of timing both for the development of the emotion of empathy and for recovery of function after damage, whether it be physical injury or environmentally caused psychological damage) with "proper stimulation and retraining" (Ibid., p. 373);

(3) the importance of matching aptitudes of the learner with instructional methods most useful to the left hemisphere preferenced learner and other methods to the right brained, and still other methods for "differentially organized brain typologies" (Ibid., p. 373); and

(4) the importance of cerebral lateralization in terms of different cognitive strengths and weaknesses and for developing differences in learning style.

It is interesting to note that in theme number two the authors delimit brain damage to physical or psychological. In light of Luria's challenging findings, the sociohistorical context might also be responsible for a special kind of brain damage--one that is more subtle wherein an individual's everyday practical reality is severely limited to a graphic-functional (right hemisphere) condition.

Wheatley et al. (1978), in a paper entitled "Hemispheric Specialization and Cognitive Development Implications for Mathematics Education," hypothesized that the "ontogeny of cognitive ability is related to the development of hemispheric asymmetry with persons at a higher cognitive stage showing a greater ratio of left to right hemisphere processing on cognitive tasks best solved through language-guided systems of information encoding" (Wheatley et al., 1978, p. 26). The continued emphasis of linear and sequential thinking, they point out, may lead to the inhibition of creative thinking, better problem solving, and spatial ability (Luria's experiments with optical illusions confirm the latter). In addition, the authors suggest that the impact of the hand-held electronic calculator may be to decrease time spent on linear processing and make it possible to spend more time on synthesis of ideas. They are attempting to develop an index for "neural maturation" which they believe will be convenient and useful for curriculum design, instructional planning, and for improving learning.

Implications for Mathematical Literacy

A synthesis of ideas about mathematical literacy will be made in an effort to relate the foregoing ideas to specific skill areas of literacy efforts. In this synthesis, a theory of mathematical literacy will be described as incorporating two basic processes: computation and problem solving. Problem solving will be viewed as the functions of perception and selection. A review of the relationship between each of these processes and specific brain structures will serve to enrich our understanding of cognition.

Apparently, two different thinking modes exist for each human being, each situated in one of the brain's opposing hemispheres. The left hemisphere mode has been described as rational (Bruner, 1962) and analytic (Ornstein, 1972, 1978), and seems to dominate in verbal tasks--

such as speaking and decoding print and also in logic, calculation, and mental arithmetic. This hemisphere, therefore, is almost exclusively focused on activity which Gibb terms "mathematical theory" and which correlates almost exactly with traditional mathematical instruction (Gibb, p. 1975).

The right hemisphere, however, described as metaphoric (Bruner, 1962; Samples, 1976), holistic (Ornstein, 1972), excels at tasks which are nonverbal and spatial. It utilizes a strategy of mentation which grasps the whole problem at once rather than proceeding in a linear, step-by-step pace. Thus, it doesn't break problems down into component parts or analysis; rather, it remains outside of them.

Whereas the left hemisphere follows algorithmic rules, the right, by its simultaneous mode of processing, handles a problem as a gestalt, perhaps by creating images of it or by assessing it in a relational way, such as in a spatially relational manner. Greeno (1976) shows how imageric and set theoretic modes of thought can be successful in solving not only simple geometry problems but also problems with fractions and extensive problems of psychophysics. While this indicates that to some degree the spatial functions of the right hemisphere may replace the rule-applying functions of the left hemisphere, more often the two work together to solve complex problems. That is, they complement one another.

What we have to this point, therefore, is a model of a mathematical brain in which the left hemisphere performs the algorithmic, calculating tasks of arithmetic while the right hemisphere assesses the whole of a problem in a spatial-relational way. Further, it seems that the holistic perception of the problem is the first stage of the problem solving process (Resnick, 1976; Samples, 1976). The third--and perhaps final--stage is when the algorithms or skills for solution of the problem are applied. Thus, the right hemisphere is immediately activated when the brain is presented a difficult problem; and after the best procedure is selected, then the left hemisphere applies the calculations.

The intermediate process of selection is also referred to in the brain literature as *attention*, or *selective attention*, since selection of anything implies that it is already being attended to. Kinsbourne's (*Education and the Brain*, 1978, p. 78) model of attention does not give it a structural locus within the brain but sees it as "the vector sum of the activities of the cerebral hemispheres" (Wittrock, 1978). Each hemisphere is hypothesized to direct attention to contralateral stimuli, and it is the nature of: (1) the stimuli itself, (2) previously given instructions, information or experience, (3) intentions and (4) sets which cause one or the other of the hemispheres to be utilized.

Luria (1973) hypothesized that planning behavior is located primarily in the frontal lobes; therefore, it is possible that insofar as attention involves planning or intentions, this may be the area which ultimately controls which hemisphere is to be used and when, given that other factors such as the nature of the stimuli are equal.

Be this as it may, the Kinsbourne model shows how "different strategies learned in different social classes...might explain observed differences in laterality in function" (Wittrock, 1978). It also gives hope that *if* students' poor performance on problem solving tasks results from an over-emphasis on left hemisphere thinking (Wheatley *et al.*, 1978), it might be possible through an increased attention to right hemisphere functioning to improve their performance.

New Directions for Transdisciplinary Study

Since the urban poor and culturally different students make up a large portion of America's illiterates, it seems imperative to test the speculations of TenHouten, Wittrock, Wheatley, and Luria who have postulated that social class and cultural background influence cognitive functioning at the hemispheric level. As a Year I pilot project for the NIE Literacy in Development endeavor at The University of Texas at Austin, Hudgens (1979) conducted an experiment on 20 remedial and 20 nonremedial community college students using three common measures of hemispheric specialization (a verbal dichotic listening test, the Nebes Haptic test, and the Coltheart visual imagery test) (Sussman, 1975; Nebes, 1971; and Coltheart, 1975). Statistically significant results suggested a strong basic differentiation between remedial and nonremedial students, with none of the remedial sample showing a left hemisphere preference and some of them showing bilateral scores (or low performance in each hemisphere). There was a statistically significant inverse relationship between left hemispheric preference and non-Anglo origins. The implications for literacy development of these results include programmatically accommodating right hemisphere-preferenced and bilateral students.

Although the literature on the human brain is admittedly highly theoretical, it is appropriate to be cognizant of the work and begin to measure our own experience against the possibility that as we begin to know more about the structure of the human brain, many of our analytically derived and ambiguously defined concepts will not be consistent with that new knowledge.

This is particularly significant with regard to "social" or "cultural" concepts currently popular for defining the nature of and solution for the problem of poor academic achievement, particularly as it relates to ethnicity and literacy acquisition. Concepts such as "cognitive style", "self-image", et cetera, may be useful for making sense out of observed phenomena, but the concepts cannot be rigorously defined. Consequently, the source(s) from which the phenomena derive are beyond our ability to investigate. Interpretation of such phenomena remains subjective.

A real first step in achieving greater rigor in our conceptual base would be to attempt to tie these (sociocultural) concepts to neurophysiological processes. At this time, based upon a synthetic evaluation of human neuroanatomical structuring, it seems much more likely that phenomena such as "cognitive style" or "approaches to learning" derive from interpersonal or societal sources rather than being learning problems developing from individual or collective (other group) internalized information processing. The following chapter elaborates on how cognitive theory can aid in tying together the inner and outer contexts of literacy development.

Chapter IV

COGNITION: THE BRIDGE BETWEEN THE INNER AND THE OUTER CONTEXTS

> All human behavior, to be fully understood, must be considered in its cultural context. This is above all true of thought processes....The content of thinking is largely controlled by culture.
>
> John Radford and Andrew Burton
> *Thinking: Its Nature and Development*
> 1974

> It is considered an instance of cultural deprivation if a slum child cannot identify a cow, but not if a suburban child is unable to identify a cockroach.
>
> Michael B. Katz
> *Class, Bureaucracy, and Schools*
> 1971

> In particular we want to emphasize our major conclusion that *cultural differences in cognition reside more in the situations to which particular cognitive processes are applied than in the existence of a process in one cultural group and its absence in another*.
>
> Michael Cole *et al.*
> *The Cultural Context of Language and Thinking*, 1971

Although the previous chapters have dealt respectively with sociocultural and neurological variables, it is obvious that literacy could not develop without the necessary cognitive processes. Yet the order is not illogical. A would-be student of literacy starts in a sociocultural setting; his neurological organization then develops; and, finally, he exercises his unique cognitive capacities. Thus, it is important to consider the nonneural cognitive capacities underlying literacy acquisition, which simultaneously focusing special attention on the too often ignored cultural factor.

The term *cognition* is now used in cognitive psychology to refer to all the information processing activities of the brain, ranging from the analysis of immediate stimuli to the organization of subjective experience (Bullock and Stallybrass, 1977, p. 109). This discussion of information processing activities includes the limitations of traditional theories of cognitive shifts, imagery, cognitive maintenance in the aging life cycle, and cognitive style, as well as the processes of problem solving and comprehension, especially as they relate to mathematical literacy and reading.

In the context of a *discussion on cognition and literacy* acquisition of the culturally different, it is imperative that one understand the weaknesses inherent in conventional theories of cognitive development and learning. Traditional cognitive theories have scarcely recognized the important variable of culture. The relationships between cognitive style and literacy development have been ignored in much of the literature. The relationship between comprehension and reading, the ways problem solving can be taught, the use of imagery as a useful way to approach learning have generally eluded discussion.

Intellectual development is one of the more complex aspects of human behavior, and its understanding involves elusive concepts and principles from diverse disciplines. The literature on cognitive development, then, is necessarily complex, and its theorists diverge.

While numerous scientists have made significant contributions to our knowledge concerning cognitive development--especially Alexander R. Luria, Jerome Bruner, and Alan Paivio, when the term is mentioned, the name that immediately comes to mind is Jean Piaget. The "master" (Gibbs, 1979, p. 249), in fact, has taken the field of intellectual development by storm, and for that reason, it is important to evaluate his model, particularly in the context of the development of a model of literacy acquisition in the culturally different adult student.

At the outset, we should identify our own biases. Our main complaint with Piaget is that his theoretical model involves only non-adults--his fundamental work was apparently based entirely on his own three children (Radford and Burton, 1974, p. 170)--and only upper middle class French individuals. His greatest weakness, from our vantage point (developing a model of literacy acquisition in the culturally different adult student), is that his model ignores the culture factor and concomitantly fails to be very useful in the context of adult cognitive development.

Summarizing Piaget's aims, Flavell (1963) saw the primary Piagetian goal as the theoretical and experimental investigation of the qualitative development of intellectual structures. For Piaget these structures had a logical groundplan with a developmental or dynamic biological underpinning. Piaget's system consisted of a qualitative, developmental hierarchy of stages which were invariant in order of appearance. That is, once one moved from one stage to the next, one could not return to the preceding one. Nevertheless, each of the stages was an integrated whole. Each piece of behavior was consistent and contributed to the rest, and each stage covered the preparation, development, and achievement of a set of operations (Radford and Burton, pp. 175-177). While Piaget acknowledged that development within a single stage might be uneven (horizontal décalage), nevertheless, there was a formal similarity between stages (vertical décalage). To illustrate the latter, Radford and Burton used the analogy of a tree with the successive appearance of leaves and blossoms--formerly rather alike. Cowan (1978), on the other hand, viewed the maturationist understanding of Piaget as a misrepresentation. He believed that the Piagetian metaphor for development was not the flowering seed, but rather the "generator-transformer".

By Piaget's own self-admission, his work can be criticized from the point of view that he has excluded the study of processes in structural transition of intellectual development. His analyses have emphasized rather the description of structures. Besides the structure-process difficulty, another problem with Piaget is the competence-performance void. Some critics (Siegel and Brainerd, 1978) have argued that Piagetian analyses require not only the supplementing of "studies of structure with studies of process, but also a substantive revamping of many theoretical interpretations along lines which recognize the subtle ways in which competence and task factors interact to determine performance" (reported in Gibbs, 1979, p. 249). Siegel, in fact, has suggested that the Piagetians are "preoperational" since they seem to be so poor at "conserving" their theoretical constructs across "superficial" changes in method (Siegel and Brainerd, 1978, p. 61)! The polemics, obviously, are quite intense. Perhaps Gibbs in his excellent article, "Evaluating Piaget" (1979) has put the discord into proper perspective:

> Developmentalists tend to see ordinary events in the broad focus and to become impatient with the myopia of learning theorists. Meanwhile, learning theorists resent the scorn of developmentalists and in return scoff at what is assumed to be a matter of fanciful imagination. Both ranges of specialization are needed, of course, but perhaps someday someone familiar with both scales of reality will offer an integrated view. Toward this end, both the Genevan studies of process and the learning-theory studies of performance can make helpful contributions (p. 253).

Because Piaget has been neglectful of the culture variable, a number of researchers have applied Piaget's model in cross-cultural studies. Marian De Lemos (1969) found that conservation developed much later in Australian aboriginal children; and, in some instances, conservation failed to develop at all. In addition, invariant order of development for conservation was not confirmed (reported in Radford and Burton, p. 223). De Lemos believed that there were several possibilities for the lack of confirmation of Piaget's model in this preliterate culture. First of all, there was no schooling. Secondly, there was no technical society or contact with a technological society. A genetic inheritance was a third possible factor; and, of course, language was the other factor.

Although De Lemos felt that the effects of schooling were not particularly important, Greenfield (1966, in her study of Wolof children in Senegal) concluded that the schooling variable influences intellectual growth more than any other variable. Other researchers concur with Greenfield that schooling or literacy acquisition contributes to cognitive development even in adulthood (Luria, 1976; Cole and Scribner, 1974; Scribner, 19 ; Pollnac, 1977; Goody, 1977; Fishman, 1972; Cole and Scribner, 1978; Cole and Bruner, 1971).

Greenfield (1968) contended that oral languages (unwritten) and languages involve different patterns of language use, and they relate to different educational methods as well as point toward different courses of cognitive development. Exposure to written languages, possibly in the context of schooling, improves the ability to abstract, according to Greenfield's research, in which she hypothesized the possibility that "context-dependent speech /of oral languages/ is tied up with context-dependent thought, which is the opposite of abstract thought..." (Ibid., p. 1). Greenfield concluded that speakers of oral languages are impaired in their ability to abstract as compared to speakers of written languages. She also maintained that children in nonwritten language cultures learn by watching and imitating, while children in cultures which speak written languages learn by listening and generalizing or abstracting. Paraphrasing Vygotsky, Greenfield suggested that "the spoken word stands for something, while the written word stands for something that stands for something."

In the context of United States society, Greenfield has suggested that lower class children have more difficulty abstracting than do middle class children. Referring to Hess and Shipman's study (Hess and Shipman, 1965, pp. 869-886, a study which produced data indicating that lower class children did about as well as the middle class children when they started on the basis of the total identity of objects--for example, forks together, knives together), Greenfield contended that when lower class children were required to abstract an attribute or attributes from the total objects, they had more difficulty both in carrying out the task and in saying what they had done.

Although Greenfield has added a great deal to our understanding of cognitive development among different classes in the United States, she apparently has fallen prey to an insidious deprivation interpretation, for the line between the effects of schooling and their contribution to cognitive development and the effects of "cultural deprivation" is very difficult to draw. Unfortunately, as Katz has pointed out, the cultural deprivation explanation for failure among minorities in American educational systems "removes responsibility for educational failure from the teacher and school fully as much as the hereditary position" (Katz, 1971, rpt. 1975, p. 112).

No one has discussed cultural deprivation, or the deficit interpretation, with more care and incisiveness than Cole and Bruner (1971). They contrast the deficit interpretation with the situational difference interpretation, lauding the work of Labov as the "most coherent denial of the deficit position, coupled with compelling illustrations of the resourcefulness of the supposedly deprived and incompetent person" (p. 458). Cole and Bruner agree with Labov that the problem of cultural differences indicates peoples' underlying competencies may not show up in certain middle class test situations, but their performance in other more familiar situations will be as good or better than their counterparts from the mainstream culture. In short, it is difficult to infer competence directly from performance when situational factors are loaded against the culturally deprived. For they "have the same underlying competence as those in the mainstream of the dominant culture, the differences in performance being accounted for by the situations and contexts in which the competence is expressed" (Cole and Bruner, 1973, p. 458).

Cole and his colleagues arrived at this "situational difference" view after the study of cognitive skills in social situations among the

Kpelle. The important finding to emerge from the Cole studies was the significance of a whole range of situations. These researchers concluded that "cultural differences in cognition reside more in the situations to which particular cognitive processes are applied than in the existence of a process in one cultural group and its absence in another" (Cole et al., 1971, p. 233).

Just as Holtzman (1968) argued that psychology must seek to lose its ethnocentric character, so too must the evolving model for literacy acquisition seek to lose its ethnocentrism. One of the main reasons for going beyond an ethnocentric point of view is that we are not at all sure that the basic mechanisms of learning are the same across cultures. In fact, most of our available learning theory has been developed by investigations on western, Anglo, middle class children. And Piaget, as we have seen, is not exempt from this limitation. As was noted in Chapter III, humankind does share a commonality of neurogenic processes, although they may be applied differently in different cultures (Laughlin and D'Aquili, 1974).

Price-Williams (1969), Cole, Gay, Glick and Sharp (1971), and Labov (1970), Cole and Bruner (1973) all have considered the inherent problems in studying cognition and culture. If indeed the human race is heterogeneous, and it appears that it is, we must face the question: In what sense is there equivalence between different cultural groups (Radford and Burton, 1974)? Cole et al. appear to fall somewhere on a continuum between believing that we have "no reason to assume psychological equivalences between cultures" and the view that it is "possible to demonstrate equivalence at some level of analysis: possibly at a behavioral level, but possibly at some level of theory or model" (Radford and Burton, 1974, p. 229).

Cognitive Shifts

In his study of peasants in Uzbekistan, Alexander Luria did go beyond an ethnocentric point of view to a new model. Originally, Luria had set out to analyze the "sociohistorical shapings of mental processes" among peasants in Central Asia in 1931-32 where farm collectivization and short-term literacy programs were exposing the previously illiterate peasants to new social and economic facts of life.

After Vygotsky's untimely death, Luria continued the research wherein he hypothesized that people with primarily "graphic-functional" (concrete, situational, and practical conceptualizations of activity "guided by physical features of objects in individuals' practical circumstances") reflection of reality would show a different system of mental process from people with a predominantly abstract, verbal, and logical approach to reality. Cognitive Development: Its Cultural and Social Foundations (1976), describes the evidence which emerged from Luria's experiments in Uzbekistan. He interpreted his data derived from qualitative interviewing techniques to suggest that cognitive processes in perception, abstraction, generalization, deduction, problem solving, and self-analysis may be different among certain cultural groups at the edge of literacy. Furthermore, those processes will change when exposed to more theoretical thinking and educational experiences. Adults, even many of the elderly subjects in Luria's study, transitioned from "situational to taxonomic conceptual thinking."

Luria concluded that "higher cognitive activities remain sociohistorical in nature, and that the structure of mental activity--not just the specific content but also the general forms basic to all cognitive processes--change in the course of historical development" (p. 8). Depending on environmental stressors, major shifts can occur in human mental activity, involving new motives for action (such as future planning) and radical changes in the structure of cognitive processes. Thus, according to the Lurian model of cognitive development, literacy programs, the introduction of farm collectives, and formal schooling can make an enormous difference in what Luria called mental shifts from graphic-functional to abstract-categorical, no matter the ethnic or cultural situation. The cognitive shifts which Luria observed in the larger sociohistorical context suggest that Piaget's rigid structural approach may not be applicable among preliterate adults, particularly in non-French cultures.

There are, of course, some problems with the Lurian approach to studying cultural differences and cognitive development. First of all, since he did not differentiate between class and cultural/ethnic dimensions, it is unclear which dimension he was testing (the class dimension, the cultural dimension, or the ethnic dimension). Perhaps he carried with him some implicit judgments as to the meaning or significance of these differences, but he failed to make them explicit. Second, with regard to Luria's view of abstract logical reasoning, it is unclear how he construed abstraction. Did he construe abstraction (1) as an evolutionary step in cognition; (2) as a developmental step in an individual; (3) as a nonreversible change in cognition, evolutionarily or developmentally *à la* Piaget; or (4) as an addition of another skill which does not necessarily displace another mode of thought? Third, one might ask whether abstract, logical thinking is a special case--a subset--of "experiential" or practical thinking. Next, if abstraction represents a subset of practical thinking, then once acquired, does it apply universally, in all situations, or does it bring with it applicability in specific sorts of contexts? Fifth, if abstract, logical reasoning is a special case, and is not universally applied, then what sorts of conditions or circumstances would lead to its use? Finally, problems in evaluating Luria are the same as those encountered in evaluating the work of all cognitive scientists: they use different tests; they create their own categories for names of processes, and these names do not necessarily name the same or similar processes. For example, graphic-functional is not exactly the same as concrete operational.

It is interesting to note that for Piaget the achievement of conservation marks the transition from stimulus-bound to abstract thinking; and because of his principle of irreversibility, once one reached the stage of abstract thinking one could not return to a lower level. Jerome Bruner, on the other hand, believed that there are three modes of representing reality, or for constructing models of the world: *enactive representation*, *ikonic representation*, and *symbolic representation*. Depending on the situation, however, one can move back and forth between these levels. In other words, in the Bruner model, earlier mechanisms can coexist with later ones, and, especially in adult life, all three representation models are available. Enactive representation is a mode of representation in which "an action seems to stand for an object to which it is related" (Radford and Burton, p. 231). Bruner's conception of ikonic representation is a mode of imaginal representation. Yet, thinking in images does not necessarily mean that one is image-bound. And certainly the ikonic mode of representation or using imagery as one way of thinking is not restricted to one age level but can be used throughout the life cycle (although some researchers have suggested that it may become dominant again in old age) (Ibid., p. 231). And finally, symbolic representation, of course, connotes language. Found only in man, Bruner states that it "becomes specialized in expression in various domains of the life of a human being: in language, in tool-using, in various atemporally organized and skilled forms of serial behavior and in the organization of experience itself" (cited in Ibid., p. 232). Thus, for Bruner there are three modes of knowing: action, image, and symbol.

Claude Levi-Strauss, on the other hand, conceptualized only two modes of thinking, one characteristic of Western technological society and the other more common in nontechnological cultures. He saw Western logic as abstract and non-Western logic as concrete. But Levi-Strauss' neat dichotomy raises the Greenfield question again of what happens when non-Western peoples acquire verbal thought, that is, written language and literacy. It is Bruner's view that "without special training in the symbolic representation of experience, the child grows to adulthood still depending in large measure on the enactive and ikonic modes of representing and organizing the world, no matter what language he speaks" (quoted in Radford and Burton, p. 259). This view, of course, diverges from the notion that thought is identical with language. For there are proponents of the argument that language is the only instrument for expressing thought, particularly abstract thought. Certainly not a linguist, nor a cognitive scientist, Karl Marx nevertheless understood the relationship between language and cognition (or consciousness) to be tightly woven:

> Language is as old as consciousness, language is practical consciousness that exists also for other men, and for that reason alone it really exists for me personally as well; language, like consciousness, only arises from the need, the necessity, of intercourse with other men....Consciousness is, therefore, from the very beginning a social product, and remains so as long as men exist at all. Consciousness is at first, of course, merely consciousness concerning the immediate sensuous environment and consciousness of the limited connection with other persons and things outside the individual who is growing self conscious (Tucker, p. 121).

This expressed relationship is reminiscent of Piaget's argument that the speech in young children is egocentric. Since Vygotsky believed that in adulthood an egocentric type of speech which he called inner speech continued to exist concomitant with external speech, he diverged from the Piagetian view. For Vygotsky, in interaction with social groups a child developed an illusion of being understood. From this inner speech, Vygotsky observed what he considered pure thought and meaning developing. Inner speech, in Vygotsky's view, was "to a large extent thinking in pure meanings....Its main distinguishing trait is its peculiar syntax. Compared with external speech, inner speech appears disconnected and incomplete" (p.149). Conceptually, Vygotsky saw the relationship between speech and thought as two circles overlapping one another. The overlap represented verbal thought. Yet pure thought could be divorced from words; for words, as Vygotsky suggested, acquired their sense "from the context in which they appear." Speech, too, could be isolated from pure thought.

Imagery

Given Levi-Strauss' conception of concrete versus abstract, Bruner's conceptualization of ikonic and symbolic representations, Luria's graphic-functional versus abstract-categorical constructs, and Vygotsky's inner and external speech, it is interesting to note that several studies which are directly related to imagery and right hemispheric functioning have also resulted in dichotomized modes of knowing with suggestive yet inconclusive biological confirmation of concrete/ikonic/graphic-functioning versus abstract/symbolic/verbal/theoretical functioning.

One of the giants in imagery research, Alan Paivio, has related much of his study on imagery and verbal processing of information to hemispheric specialization theory. In his dual processing model of encoding, Paivio posits two separate but interacting systems of encoding and storing information: verbal processing and imaginal processing. His discussion of the functional asymmetry of the cerebral hemispheres obviously reflects his excitement:

> In addition to the obvious neuropsychological significance of the above findings, they are pertinent here because they are generally consistent with the two process theory of symbolic functioning. Left hemisphere lesions are associated with behavioral deficits that can be conceptualized as a loss in verbal symbolic abilities, whereas right hemisphere lesions produce selective deficits in the individual's ability to process concrete (nonverbal) information from memory (1971, p. 523).

Unfortunately, the conceptual framework that has emerged to explain the imagery phenomena has been closely tied to the perceptual processes. But the assumption that visual perception and visual imagery rely on the same neural functioning mechanisms may be in error (Gazzaniga and Le Doux, 1978).

Language and Thought

Mechanisms and perceptions aside, since the time of Vygotsky's study of the relationship between language and thinking, a number of sociolinguists, anthropologists, and others have considered the question of differences in the way language enters the cognitive process. Perhaps best known is Benjamin Lee Whorf (1956). The linguistic relativity view--more popularly known as the Whorfian hypothesis--makes several assertions. The first assertion is that the world presents "a kaleidoscopic flux of impressions which has to be organized by our minds." Another assertion made by Whorf was that language gives us the means of ordering the environment. A final, implicit assertion is that different languages cause us to order the environment in differing ways. It is this final assertion which has become known as the linguistic relativity hypothesis, or Whorfian hypothesis.

Michael Cole and Sylvia Scribner, among others, have refuted the Whorfian hypothesis. For them, the hypothesis is untenable, primarily because although concepts may be differentially available in different cultures they do not appear to be culturally exclusive (Cole and Scribner, 1974, p. 52). Radford and Burton (1974, pp. 259-262) also find the Whorfian hypothesis unconvincing.

As noted in Chapter II, Bernstein (1970) has argued that it is in the nature of the very social life of the urban ghetto that there develops a kind of particularism in which communication usually takes place only along concrete personal lines. Reminiscent of Luria's graphic-functional notion, Bernstein's concept of "orientation" suggests that the ghetto child, who by training is likely to use an idiosyncratic mode of communication, may be locked into the life of his own cultural group, and his migration into other groups consequently becomes more difficult (reported in Cole and Bruner, pp. 459-460).

A pioneer in the field of sociolinguistics, Joshua A. Fishman, in Language in Sociocultural Change (1972) maintains that "situational shifting" can take place within the same group of people. That is, college students speaking one variety of language in the classroom may speak another variety in the fraternity house. Those students, however, who lack what Fishman calls "sociolinguistic communicative competence" face enormous problems, particularly with respect to employability. Shy (1970) (cited in Sticht, 1975, p. 145) suggested that employers with good intentions may fail to hire or even promote employees whose dialect suggests a lower class than is usually expected of the position. This situation, of course, is not a question of ability or capacity but rather is similar to Bernstein's notion of orientation. Or, as Fishman suggests, "any reasonably complex speech community contains various speech networks that vary with respect to the nature and ranges of their speech repertoires" (Fishman, 1972, p. 288). Measured differences and "abilities" are often merely misunderstood differences of language sociology!

In order to understand the social limits to learning, Vygotsky's notion of "the zone of proximal development" may be helpful. His definition of this concept is "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978,

p. 86). Williams and Callahan (1977) have hypothesized that attempts to raise cognitive abilities of students are dependent upon the utilization of "higher levels of instruction." Although the authors do not quote Vygotsky, their construct may be related to Vygotsky's zone of proximal development. This possible link is especially intriguing since Williams and Callahan found that cognitive complexity and personality collectively accounted for 73 percent of the variance in the level of information processing taking place in the classroom.

In line with the claim that there is no absolute dichotomy between the preliterate and the literate mind, Jack Goody investigated literacy development in primitive societies, asking the question: "How is the thinking of primitive peoples different from the thinking of civilized peoples?" For Goody (1977), the development of writing forced the savage mind to think differently. Goody focuses on three specific forms of writing as being most influential in altering the cognitive content of thought: the list, the formula, and the table. In an oral, illiterate tradition there does not exist the "abhorence of the empty box" as much as it exists in a visual, written tradition simply because the empty box is not evident. In an oral presentation of knowledge, such gaps in a paradigm usually are not perceived. Goody believed that the ability of putting down one's thoughts in written form allows a "reinspection by a visual mode." This contrasts with expressing one's thoughts orally in which reinspection is possible only with one's inner ear.

In a study of a society which was literate in its own language but in which literacy was not learned in school but rather through informal instruction and individual practice, Cole and Scribner found that the Vai literates of Liberia were not significantly different from nonliterates on any of the cognitive measures including sorting and reasoning tasks--tasks suggested to be especially sensitive to experience with a written language (Cole and Scribner, 1978, p. 453). Making the distinction between becoming educated and becoming literate (Ibid., p. 453), Cole and Scribner suggested that designing adult literacy programs on the assumption that nonliterates do not think abstractly or do not reason logically is inappropriate.

Goody's understanding of cognition is similar to Cole's and Scribner's and also supports the notion that literacy causes cognitive shifts. But it is not inconsistent with the notion that "all men, everywhere, theorize to some degree" (Laughlin and D'Aquili, 1974, p. 142). If it is true that homo sapiens, regardless of race, language, and culture, construct "theoretical models in the same fashion and for the same reason--because they are genetically predetermined to do so," then this is further evidence that the Whorfian hypothesis is untenable. It might be questioned whether all people construct models in the same fashion due to genetic predetermination. Preferable to us is the position that all people are genetically capable of creating similar models and that the differences which emerge will be predominantly the differences of values and social structure (Laughlin and D'Aquili, p. 143).

Lenneberg (1967) built a model of language acquisition which related the interactions of language, cognition, and reality. He believed that a universal grammar, dependent upon common modes of biogenetically based cognition, existed across cultures. Among his prop-

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ositions were that language is the manifestation of species-specific cognitive propensities and that cognitive function underlying language consisted of an adaptation of a ubiquitous process (among vertebrates) of categorization and extraction of similarities. Lenneberg, Laughlin and D'Aquili, and Cole and Scribner concur in the belief that we are unlikely to find "cultural differences in basic component cognitive processes" (Cole and Scribner, 1974, p. 193). In short, no cultural group wholly lacks the capacity to abstract, to categorize, or to infer. That is, there is no hard evidence that a "primitive" logic exists.

Rather than stemming from a basic cognitive component, the perceived differences may be products of a more superficial expression of language. Sarah Moskovitz maintains that culturally different children come to mainstream schools with a rich stockpile of meaningful language (but she also claims that the school ignores this repository since it deviates from the mainstream stockpile). The schools look upon these children as if they had "meager vocabularies, neglecting the fact that the vocabulary may be meager in Standard English though not in Black English (or Spanish)." She recommends acknowledging Vygotsky's insights into the *separateness of language and thought* (our italics), thus freeing us to respect the thoughts of children whose language expresses thought differently and to respect children who as yet do not have *our* language to express *their* thoughts" (Moskovitz, 1974, pp. 75-78).

In Luria's experiments in Central Asia, one of the principal findings he made with regard to generalization and abstraction among the illiterate subjects he questioned was that the *meaning of words* for his subjects seemed not "to have the same 'categorical' meaning they do in a system of abstract thought" (1976, p. 79). Mehan and Wood (1975), Cicourel (1974a and b), and many other anthropologists and sociolinguists have pointed out how language reflects educational experience and social influences. Cicourel (1974a) puts it this way:

> For those with less educational experience, the social meanings of the world of everyday life may be represented differently (Bernstein, 1958, 1959, 1960 and 1962). The study of language use is important for understanding how actors routinize or normalize their environments, perceive and interpret them as threatening, disruptive, new or strange (p. 32).

Susan Phillips' research on Indian students corroborates TenHouten's findings. The Indian student, she found, exhibited an intense *visual* behavior in the learning environment. TenHouten, we remember, found Hopi Indians, Eskimos, and blacks as well to be appositional (*visuo-spatial* or right hemisphere preferenced) in their mental processes (Phillips, 1972; TenHouten, 1976).

The Kpelle rice farmers described by Cole and Scribner (1974, pp. 177-179) were accustomed to learning by observation (*visually*), as pointed out by an experiment with sticks of various shapes and sizes. It is fair to suggest, then, that these people, given their cultural conditions and environment, approached problem solving appositionally as well.

But one caveat here. Distortions can creep in quickly when we lump all of these people into one category, i.e., appositional, for as Lane (1972) points out with reference to Canadian Indians:

> The degree to which learning, whether in or out of school, constitutes 'learning in alien culture' depends upon the degree of culture distance between the individual and the particular situations in which he finds himself. Clearly this will vary from person to person. A middle class urban Indian child of highly acculturated parents is not raised in the same subculture as a child in a family dependent on welfare and living in an overcrowded house on a nearby unserviced reserve, although they may attend the same school. Yet when that school population is studied, they are lumped together as 'the Indian sample' (p. 353).

Moreover, the cognitive processes of one group culturally different from the mainstream may differ from another culturally different group: non-English-speaking Mexican American, Puerto Rican, American Indian and black students achieve below the mainstream and national norms. Yet, as earlier noted, Oriental Americans, whose primary language may be Chinese, Vietnamese, Thai, Japanese, et cetera, achieve near the norm (Parker, 1975, p. 30). *Linguistic difference alone, then, may not be as critical a factor in the cultural-cognition matrix as we have thought*. As Cole and Scribner suggest in their passage about the Kamayura color for blue and green being "parakeet", "complex questions involving relation of languages to perception and thought, as well as the *validity of using linguistic evidence to make inferences about perception and thought*" are not easily resolved (1974, pp. 2-3). Recent developments in the neurological sciences, as we have seen, suggest there may be some sociocultural/neurological/biological indicators as well.

Cole and Scribner, nevertheless, dispense with a biological explanation of culture in their book *Culture and Thought*. They do this primarily because, as we read them, the sources they consulted connected race with culture and genetic transmission with cultural change (Cole and Scribner, 1974, especially p. 19). But Edward O. Wilson, the author of *Sociobiology, the New Synthesis*, has suggested that "differences between cultures are more likely based on learning and socialization" (in the sense of enculturation, the act of learning one culture in all its uniqueness and particularity) "rather than on genes" (Wilson, 1975, p. 159; 1977, p. 15).

In order to explain some cross-cultural Piagetian experiments which suggested differences in logical competencies among other cultures, Sylvia Scribner wrote that improper interpretation of the results has taken place. She argued that logical problems pose special difficulties for nonliterate people regardless of culture. Real world knowledge and experience ("empirical bias", as she called it, are all that preliterates have to depend on when faced with problem solving. Scribner found that nonliterates rarely used theoretical reasoning, but when they did (and she believed them capable of using theoretical explanations although such is not their tendency) their answers were almost always correct, even when all their other answers (based on empirical, real world experience reasoning) were inaccurate.

Scribner's viewpoint, then, suggests that unless an individual understands the task underlying both recall (memory) and solution, logical relations will not emerge. A two-tiered genre model she developed attempts to explain performance in particular contexts. Her examples of "simple genres" are greetings, farewells, riddles, proverbs, and prayers. Examples of "complex genres" are tales and myths.

Implications of Scribner's model within the context of the community college are numerous. For example, it is possible that if community college students have not yet developed schemas for internalizing formal problem structure (apart from the system of one's own personal experience), they cannot make sense of material presented, and without sense and structure, there will be no guide to the retention and retrieval of content. Schemas require knowledge of technical jargon or what Scribner calls "logic idiom" for special kinds of talk. Naturally, students who are unfamiliar with preexisting schemas into which verbal logic problems can be assimilated will not only find a college classroom irrelevant, but will find themselves frustrated and possibly alienated.

Michael Cole would agree. In experimental situations a subject must be familiar with the materials about which he is asked to reason. Not only do subjects have a hard time dealing with "the funny device" but "it is a particular stage in having to work it that is the stumbling block" (Cole, 1977, p. 477). Cole particularly criticizes Piagetian conservation experiments as being nonindicative of cognitive development because of the lack of familiarity on the part of the subjects. He, therefore, urges researchers to clarify the concepts of cognitive process and situation.

Situation, then, must refer to the whole context of inquiry which will include the mundane, everyday life of culturally different folks whether they have had practice in certain subject areas and cognitive skill tasks. Folks learn "generalized problem solving skills through repeated experience with different problems of the same type" (Ibid., p. 481). Cole remains impressed by the way traditional peoples seem to apply complex cognitive skills in social situations, while failing to use these skills in an experimental task.

Cognitive Maintenance and the Life Cycle

Research in the field of gerontology has produced a number of findings which are applicable to the understanding of cognition in the context of the culturally different student's acquisition of literacy (Hudgens, 1978). This body of research has asked questions such as: What happens to the mental faculties as a person ages? Is there a pattern, a normal path, indeed, a single model one can depend on for predicting cognitive and intellectual activity as one grows older? Do older human beings lose the one power that many believe "sets them apart from beasts?" What role does the environment play in the decline, maintenance, or even growth of cognitive functioning in the older adult? How applicable is that old adage, "You can't teach and old dog new tricks"? Can we generalize from gerontological findings about the thinking abilities of the elderly? How important is culture, language, health, education?

These questions are relevant in the context of reviewing the learning strategies of the culturally different remedial student in the community college. This is especially true since there are many older students now participating in such programs. Elsewhere, there has been a suggested relationship between alienation and neurological functioning or culture/ethnicity and hemispheric preference. The literature on aging and cognition suggests that there may be a correlation between apathy (surely related to alienation) and cognitive performance (Cyr and Stones, 1976). Moreover, with increasing age there is a tendency to respond more slowly (Andrulis and Bush, 1977; Botwinick, 1967).

The persistent myth that intellectual functioning slides downhill, never to return, from middle age to old age may have little basis in fact. Nevertheless, that myth continues to be an accepted axiom in the lives of many older adults. Self-fulfilling prophecy perpetuates the myth and makes it reality. With the proportion of older persons in the national population increasing, the focus of educators has moved from educating the younger generation to the lifelong endeavor of renewal. Adult development research and that of gerontology both indicate that adults of any age *can* learn if given the proper conditions. Such conditions probably include enough time, support, and lack of gross health maladies and lack of cultural biases.

Two branches of study substantiate the maintenance of mental functioning in the older adult: the cultural variable and the findings from the hard sciences. Cultural influences on cognition and adult functioning have been found to play a significant role in the controversial topic of mental faculties in the aging human being. Since education is a sociocultural component, it is not surprising that many researchers have found it to be highly correlated with cognitive performance (Selzer and Denney, 1977; Schaie and Zelinski, 1975; Schaie and Gribbin, 1975; Freire, 1978; Luria, 1976). Both socioeconomic status and the extent of education continue to crop up as important factors in the maintenance of cognitive functioning in the aged. *The most alienated, powerless, defensive elderly seem to be those whose education was shorter lived* (Knox, 1977; Selzer, 1977; Schaie, 1975). The more educated person apparently has more knowledge about staying healthy, and significantly, the empirical research substantiates this (Botwinick, 1967; Schaie and Gribbin, 1975). Education does seem to be central in cognitive maintenance. Apparently, it is the catalyst for the active mind. Levinson (1978) observed the power of social forces (including educational institutions) on individual development over and over again.

Current hard core scientific and social/behavioral science research on cognition and aging indicates that there are environmental (cultural), physiological, psychological, and, perhaps, even genetic factors which contribute to decline. Although Botwinick's *Cognitive Processes in Maturity and Old Age* (1967) could profit by an updated revision, it is a key work and one which should be read by anyone attempting to do research in the field of cognition and aging. A massive synthesis of the research on cognitive process in the older adult, this work evaluates hundreds of investigations dealing with cognitive functioning.

Botwinick, who preferred not to include sickness as part of a definition of aging, believed that aging occurs apart from sickness, and appearance and test behavior were more valid measures of aging than chronological age. In his discussion of a continuing controversy in the field of intelligence in adults, he contributed an important point: in longitudinal investigations, initially less able subjects are not as available for subsequent retestings as the more able, thus confounding results, biasing the samples of later life retests, and minimizing age deficits. His thoughtful considerations of noncognitive factors influencing the learning process predate Bloom's notions of school affect (1976) and the recent swell of humanistic education. Botwinick presaged a movement toward investigating loss of speed or slower response accounting for poor performance in test situations. Recognizing that a small cognitive deficit in the learning category might have substantial consequences in the everyday life of an aging individual, Botwinick suggested that a loss of speed might be more striking than a learning disability. Future researchers obviously had to look closer at that issue.

Botwinick describes the tendency of older people to conceptualize functionally rather than to generalize. Their performances on tests of integration are described as "concrete, i.e., literal recognition responses rather than abstraction in which meaning over and beyond specific details is inferred"--shades of Luria.

Not satisfied with mere cohort studies, Warner K. Schaie and Kathy Gribbin looked at the impact of sociocultural change on an individual and his "macroenvironment". The macroenvironment, for them, is made up of variables "in the day to day experience of adults which may be assumed to make a difference in the maintenance of cognitive functions over and beyond physical health" (p. 2).

In what appears to be one of the most promising and plausible directions in research regarding cognitive change over time, Schaie and Gribbin administered the Life Complexity Inventory--a technique permitting current and retrospective assessment of client status--to 100 subjects ranging in age from 40 to 88. These subjects' intellectual and personality functioning had been tested in 1956, 1963, and 1970. In initial findings, it appears that demographic variables may be better predictors than either chronological age or cohort membership for cognitive functioning.

A number of distinct environmental clusters representing particular patterns of life experiences, or relationships to family or the larger environment, were derived and correlated with change in cognitive function (measured by the primary mental abilities and the test of behavioral rigidity) over two periods from 1956 to 1963 and from 1963 to 1970. Four model subject types resulted from grouping individuals according to these clusters. Each of these types differed in the pattern of change in cognitive function over time. For example, Type Four (predominantly disengaged homemakers/widows in family dissolution) excluded the two youngest cohorts and showed decrements in all areas tested, while Type Two individuals (high social status, well satisfied with life status, intact families, slightly above average maintenance of acculturation) increased in word fluency, personality-perceptual rigidity, and psychomotor speed.

One rather innovative thinker in the field of gerontology has suggested that the nature of cognitive changes (and the factors and conditions involved) is significantly influenced by whatever model of adult development one chooses (Hultsch, 1977). Hultsch, in fact, does more than any other single author to arrange in historical and methodological perspective the evolution of research on aging and learning/memory performance. Not only does he classify the various approaches of this research into several logical categories (the associative approach, the information processing approach, and the contextual approach), but he also provides a clean-cut view of the theories, methods, and goals of these approaches. His concise survey of the contextual approach is indeed a welcome contribution. Because of its tendency to expand and incorporate events, the contextual perspective shows more promise than the others for useful lifespan developmental understanding, in general, and for understanding the literacy acquisition of culturally different adults in particular.

Hultsch, concurring with Thomas Kuhn, believes that the models we choose function as metaphors and determine or limit the basic parameters of our investigations, the nature of the questions to be asked, and our representation of reality.

Table I, page 81, represents a synthesis of our own findings and Hultsch's ideas. Using this synthetic model, then, contextualism may be quite amenable to the interaction approach. There is continuous change, and transitions occur fluidly interacting with total context. Rather than the main effects (as in the associative or information processing approaches), the interaction effects count the most. In this model, affect gains in importance where only stimulus-response was considered in the associative/mechanistic model. In view of the overwhelming amount of knowledge now being produced, from neuron deterioration to Freire's political education successes, an interaction model seems much more powerful.

It is likely that we cannot know the answers to the questions raised in the beginnings of this section until transdisciplinary research is pursued which considers the interaction effects of not only the triumvirate of genetics, environment, and neurological organization, but also microenvironments (Schaie and Gribbin, 1975), alienation (Freire, 1978), and such seemingly serendipitous angles as spatial abilities (Harris, 1978; Cohen, 1977). At this stage of knowledge, perhaps the most we can say with confidence is that individuals differ enormously, there is not a predicted pattern, and, yes, the environment plays a critical role; but we still do not know how much and which parts are most critical.

Cognitive Style

In spite of the literature which suggests that basic cognitive processes are the same within the species, we have known for a long time that there are individual differences between groups and within groups. In fact, such differences have intrigued many psychologists who have come to call individual characteristic modes of responding to the environment by the term cognitive style. Since these modes are manifested in a wide variety of different situations, these cognitive styles are often said to be transsituational (Radford and Burton, p. 241).

Witkin believes that cognitive styles go beyond aspects of per-

MODELS OF COGNITIVE DECLINE*

Approach	Historical Context	Metamodel	View of Aging & Learning Performance	Principal Processes	Principal Antecedents	View of Development
Associative	to late 1950s	Mechanistic maturational "growth"	irreversible decrement S-R bonds of memory	interference decay	biological	Behavior change Quantitative
Information Processing	early '60s - 1977	Quasi-organismic	decrement with compensation	Cognitive Storage structures Control operations Sensory short-term long-term store	teleological productive deficiency	Structural change Linear change
Contextualism	1974 -	Pepper's Contextual	nondecremental dynamic on-going events	novelty change duration quality of events individual experiences	historic event resulting from transactions on individual & context	on-going activity

*Synthesized from Hultsch (1977) and Hudgens (1979)

TABLE I

sonality: "they are known to be manifestations in the cognitive sphere, of still broader dimensions of personal functioning" (1967). The respectability of cognitive style, in fact, has increased to the point that a Supreme Court case (Lau vs. Nichols, 1979) has required that educational programs and practices begin to consider the learning or cognitive styles of linguistic minority children. A number of researchers (Canavan, 1969; Cohen, 1969; Ramirez and Price-Williams, 1974; Ramirez, Castañeda, and Harold, 1974; Ramirez and Castañeda, 1974; Buriel, 1975; and Kagan and Buriel, 1977) have found differences in certain dimensions of cognitive style due to one or more cultural factors. The main hypothesis emerging from this research, however, is that there appears to be a strong relationship between cognitive style and reading ability. The relationship between reading ability and cultural differences remains a relatively inconclusive one. Recognizing that cognitive style might be as much a cultural as an individual phenomenon, Glick (1968) suggested early on that "it is quite possible for all people to adopt similar styles of thinking but the conditions for eliciting these styles of thinking may vary with the individual or the culture."

While it is worthwhile investigating the connection between cognitive style and cultural factors, it may be more useful in terms of specific remediation programs, first, to examine definitions and concepts. After a discussion of culture and cognitive style, one might better understand the broad educational implications for literacy development.

Conceptual Framework and Some Definitions

There is still a great deal of debate about cognitive style and the labels which have been used. Many theorists, however, would agree that cognitive style is a hypothetical construct that refers to the way information is processed as it passes from a stimulus into the mind of the perceiver, or learner. It "refers to the characteristic ways in which individuals conceptually organize the environment" (Goldstein and Blackman, 1978). Although Kagan (1971), Bieri (1971), Harvey (1963), and Messick (1976) define cognitive style in terms of mediating or processing information, Coop and Sigel (1971) use the term cognitive style for denoting modes of functioning across behavioral situations. Thus, for them, a cognitive style does not refer to ways that thought is structured; rather, *a cognitive style is a behavioral style*.

Whether cognitive style is linked closely with personality is still an unsettled question. Klein's 1970 cognitive style definition, for example, explicitly includes a personality dimension: "an arrangement of cognitive attitudes, constituting another structural level of *personality*" (our italics). To clarify present thinking on the issue, Klein (1970) has proposed that cognitive style is actually "an arrangement of cognitive attitudes, constituting another structural level of personality." And, Vernon (1971) has suggested that research in cognitive styles has led to "more confusion than clarification...less ambitious studies, which were designed to show the scope, limitations and stability of some particular cognitive variables, might be worthwhile."

Much of the research on cognitive style, then, is inconsistent. For example, Messick (1976) has listed a total of 19 approaches to the study of cognitive style. The following review of the literature, therefore, will give an overview of only the most prominent approaches.

*Field Dependence/Field Independence**--The most popular and common set of measures of cognitive style were developed by Witkin, beginning in 1954. In this early research he examined some of the characteristics of perception. The dominant theme he discovered was that there existed the dimension of differentiation of stimuli from their backgrounds. Individuals who were able to perceive items as discrete from the fields in which they were embedded were recognized as operating at the field independent pole of the differentiation dimension. Those who were unable to dis-embed or unable "to overcome the influence of an embedding context" (Witkin, 1962, p. 58) were designated as field dependent.

Basically a measure of a high degree of psychological and perceptual differentiation, Witkin's construct of field independence suggests that field *independent* individuals are more suited for abstract thinking. Field *dependent* persons, on the other hand, are more comfortable with information presented in a concrete mode, and need strong stimuli for differentiation to occur. In examining field dependence Witkin and his associates used three tests: the Embedded Figures Test (EFT), the Rod-and-Frame Test (RFT), and the Body Adjustment Test (BAT). Goodenough and Carp (1961) and Witkin *et al*. (1962) completed research that correlated and showed perceptual performance on tests to be related to performance in nonperceptual, more intellectual tasks. Witkin later postulated that the connection between the perceptual and the cognitive was a dimension of differentiation. He thus proposed the substitution of the term "global-articulated" cognitive style: "at one extreme there is a consistent tendency for experience to be global and diffuse--the organization of the field as a whole dictates the manner in which its parts are experienced. At the other extreme there is a tendency for experience to be delineated and structured--parts of the field are experienced as discrete and the field as a whole organized." To these opposite poles of cognitive style we may apply the labels "global" and "articulated". Witkin *et al*. (1971) defined global-articulation as a broad concept which includes differences in perception of the self, body concept, emotional controls and defenses as well as cognitive functions such as analysis and restructuring. Evidently, the difference between the old and the new constructs of field dependence/field independence and global-articulation is primarily perceptual. The global-articulation concept extends into the realm of the cognitive.

Some researchers have attempted to link field dependence with spatial ability since measures of certain tests of the WAIS correlate with both spatial ability and field dependence. Harris (1978), in an arresting argument, suggests that the most popular tests for field independence (specifically, the rod-and-frame and embedded-figures tests) are visuospatial tasks, on which males consistently excel. The visuospatial aspects indicate the fallacious-ness of the tests for "evidence that females are more field dependent, global thinking, or cognitively undifferentiated...in general cognitive or mentative style" (Harris, 1978, p. 490). No sex differences have emerged in other measures of field dependence having no spatial aspects. In study after study, in fact, Harris reports that males have better spatial ability than females. Only in Berry's study of the Eskimo do we find that both men and women excel in spatial abilities, a product, Harris believes, of both their environment and language (Ibid., p. 428, p. 487).

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*Ramirez and Castañeda (1974) suggest the substitution of the term field sensitive for field dependence because "it is far too easy to conclude that field dependent means 'dependent personality'...the word 'dependent' has come to acquire negative connotations" (p. 75).

Cognitive Complexity--In 1955, the famous clinical psychologist, George A. Kelly, framed his cognitive view of man in The Psychology of Personal Constructs. He theorized that every individual has a cognitive style which is more or less complex as judged by number of concepts or constructs that the individual applied to the persons in his world. Cognitive complexity is measured by the Role Construct Repertory Test (REP Test) which indicates whether an individual uses many construct categories is one who is judged cognitively complex from Kelly's perspective. An individual who uses few construct categories, on the other hand, is one who is judged cognitively non-complex. Cognitive complexity, then, focuses on individuals' perceptions of other individuals. As such, it is not particularly useful for evaluating cognitive aspects--e.g., memory.

There are two forms of the REP Test. The original, developed by Kelly, uses constructs generated by the subjects themselves. The test developed by Bieri (1966) employs constructs provided by the investigator. Since Pervin (1973) questions cultural interpretations arising from constructs provided by the investigator, the original form of the test (devised by Kelly) may be more valuable and therefore preferable for measuring cognitive style in culturally different students.

Control Mechanisms--Gardner and his associates (1959, 1960) developed a type of cognitive style which was composed of different control mechanisms. These mechanisms reflect the ways in which individuals manage all the information that they receive, including affective information. The management of this information processing is seen as a cognitive process because it occurs in memory, attention, perception, et cetera. The total network of these control mechanisms constitutes their cognitive style construct, and six are discussed here.

The first of these types of cognitive controls is called Tolerance for Unrealistic Experiences--the individual's capacity for accepting abnormal experience in his life. This type of cognitive control may be measured by a test of the subject's perception of movement in the "Phi" Phenomena.

Perception of movement is not necessarily reflective of the individual's differentiation between elements in the perceptual field for such differentiation represents only a selection of everything in the environment. The degree to which people sample the range of signals available to them at any given time, such as the perception of movement, reflects their deployment of attention. If an individual is consistent in the attentional mode that he employs, then we can be relatively sure that this individual will respond to signals in comparable ways. Gardner (1959) distinguished between two attentional strategies: scanning and focusing: "scanners are people who deploy their attention over the visual field, whilst focusers limit their attention to one narrow area" (reported in Reed, 1974, p. 27). Scanning is a measure of the degree that an individual attempts to verify his judgment and is usually measured by tests which observe an individual given a task of fitting different circles with each other. A subject who exhibits more comparing between circles is one who operationally does more scanning.

A third type of control mechanism is Conceptual Differentiation, also known as "equivalence range". This control is the degree to which an individual judges items to be similar or different. If an individual, for example, has a tendency toward judging few items as equivalent, this is understood to indicate a greater tendency of conceptual differentiation. This type of cognitive control mechanism has been measured by two tests: the Object Sorting Test and the Size Constancy Test.

A fourth style of control is Constricted-Flexible Control, a dimension hypothesized to describe an individual's tendency toward being distracted. This control mechanism has been measured by either the Stroop Color Word Test or the Fruit Distraction Test. In these tests an individual is given two conflicting cues. To the degree that he can disregard the cue which is more distracting, this person is designated "flexible". An individual who has a constricted style of control is one who is not able to disregard these distractions.

A fifth dimension of cognitive control is dichotomized into leveling or sharpening. Klein and Holzman (1950) and Holzman and Klein (1954) first introduced the notion of "leveling and sharpening," after they had conducted an experiment in which subjects were presented with a series of fourteen squares shown one at a time and asked to judge the absolute size of these squares. Without the subject's knowledge, the smallest square was removed and replaced with another square larger than the previous small five squares. The average size of the stimulus as a whole, then, was relatively larger. The substitution procedure continued as judgements for each size of square were obtained. Some of the subjects made highly accurate judgments throughout while others appeared to disregard these changes and continued to judge the sizes as if the original five small squares were still present. Klein and Holzman referred to the former tendency as "sharpening" (the accurate judgments) and to the latter as "leveling" (disregarded size changes). Hence, sharpeners are those who are able to distinguish the difference between a new perception and the one which they had stored in memory. Those individuals whose perceptions are perceived as being little different from remembered perceptions are termed "levelers". Thus, the general adaptive strategies employed by the "sharpener" are said to be different from those of the "leveler".

The last dimension of Gardner's cognitive style network of control mechanisms is known as Field Articulation. It is almost the same as Witkin's field independence. Measured by the same tests as field independence/dependence (Embedded Figures Test and the Rod-and-Frame Test), field articulation reflects the individual who is able to distinguish objects that are contextually embedded within other objects. According to Radford and Burton (1974), cognitive controls, of whatever dimension, are stable modes of cognitive functioning which are manifested in a variety of situations and which are intimately bound up with the whole structure of personality.

Conceptual Style--Another approach to cognitive style is contained in the work of Kagan, Sigel and Moss (1963), a work organized around the concept of how individuals group objects. This approach contains three modes by which individuals create groupings: the analytic, the relational and the inferential. To illustrate these modes, suppose that we have a picture of three people in standing positions. Two of these people wear shoes; one does not. Two wear wedding rings, and the other does not. The two individuals wearing the rings are dressed in very ragged clothing. If this picture were presented to a subject who normally thinks in analytic/descriptive terms (the analytic mode), he would more than likely perceive those dressed alike in such categories as shoes, wedding rings, or ragged clothing. An individual whose style is relational/contextual, on the other hand, might look beyond the surface features or look beyond the common elements that are seen and pick up a functional relationship between the objects that are illustrated. He would then be focusing on the thematic relationships between the objects. In the picture of these three individuals, for example, he would see the two with rings and he would say to himself, "They are married." An individual whose mode is inferential/categorical (this style is one that makes a judgment on the basis of abstract similarities between the objects grouped together) would make inferences about the objects in the picture. This last mode is a sort of "detective" style, thus the inferentially thinking individual would group the two people dressed in ragged clothing and would think of them as "two poor people." Thus, conceptual style is a notion which attempts to describe the modes of categorization that different people have. This particular approach appears to be more cognitive than the behavior/personality cognitive style research. It also meshes well with hemispheric specialization theory if one were to consider left-brain preferenced people the analytic thinkers, right-brain preferenced individuals, as the relational mode operators, and those integrating both sides of the brain as those who infer. Conceptual style has often been measured by the Sigel Conceptual Styles Test, the Sigel Object Categorization Task, the Conceptual Styles Test, and a modified version of the Conceptual Styles Test which uses three-dimensional objects.

Reflection-Impulsivity--Kagan, Rossman, Day, Albert and Phillips (1964) developed their notion of reflection/impulsivity to illustrate another way of examining styles of cognition. Reflection/impulsivity is a measure of the speed with which individuals make decisions. An individual who responds rapidly when presented with several alternatives is labeled impulsive; one who responds slowly and accurately is termed reflective. This type of cognitive style has most often been measured by the Matching Familiar Figures Test.

Integrative Complexity--Schroder, Driver, and Streufert (1967) maintain that all information is processed by differentiation and integration. Differentiation is the ability to distinguish differences in the stream of information. Integration is the ability to make use of complex rules, or schemata, for combining the information generated by the process of differentiation. An individual who is low in differentiation will be low in integration. An individual high in integrative capacity will be high in his ability to differentiate. These processes are simultaneously analogous to activity in individuals who are abstract and concrete. The abstract individual is integratively complex; the concrete individual is low in differentiating and integrating ability. Established, then, is a continuum that moves from concrete or low differentiation and integration, on the one hand, to an abstract position high in integrative and differentiative ability, on the other. Harvey, Hunt and Schroder (1961), in the earliest formulation of this cognitive style, marked four nodal points (distinct positions) or four operating systems.

System 1 lies at the concrete end of the scale. System 1 individuals are the most dependent, structuring the world with the greatest concreteness. Characteristics of System 1 are: intolerance of ambiguity, greater reliance on authority, greater rigidity, an inability to see alternative solutions to problems, poor ability to think hypothetically, a poor self-concept, and, of course, poor differentiation and incomplete integration.

The next nodal point represents the System 2 individual, who is characterized as beginning to make differentiations in perception. These differentiations, however, are fixed conditionally. Although behavior is still not completely flexible, there is a tendency to push against rules and to feel uncomfortable with control. For this reason, System 2 is also called the stage of negativism.

The System 3 stage is called the stage of independence. At this stage, differentiation and integration become more and more complex, and decisions are often compromises of situational demands.

Interdependence is the term used to describe the System 4 position. At this point, the individual is at the most abstract level of functioning along the scale, has an ability to tolerate ambiguity, is flexible, thinks abstractly, and has the greatest tolerance for stress. He also is more sensitive to subtle environmental cues and is less likely to make extreme or polarized judgments.

Although assessing integrative complexity is problematic, it has been measured by the Sentence Completion Test, the Paragraph Completion Test, the "this I believe" or TIB Test, the Impression Formation Test, and the Interpersonal Topical Inventory (ITI). Multidimensional scaling has been tried recently (Cohen and Feldman, 1975), but until more data is collected the usefulness of this method of measurement will remain uncertain.

A distinction needs to be made between the concepts of differentiation and integration. Goldstein and Blackman have referred to absolute relationship between integration and differentiation in integrative complexity theory: "Integration is related to differentiation in that the greater the number of dimensions, the greater the potential for complex schemata" (1976). Witkin, on the other hand, distinguishes between the complexity and the effectiveness of integration, while admitting that differentiation is necessary for integration. Nevertheless, the presence of differentiation does not imply that integration necessarily follows. It is questionable, then, whether the standard measures of field dependence recognize this difference.

Culture and Cognitive Style

In the past several decades, research in the fields of cross-cultural psychology, anthropology, and sociology has yielded data that indicate correlations between different cultures and cognitive styles, especially with reference to Witkin's notion of global-articulation. By far, the most extensive cross-cultural study of any type of cognitive style is the one by Berry and Associates. Their research, described in *Human Ecology and Cognitive Style* (1976), surveyed ten different societies with at least two samples from each for a total of 21 samples. The cultures were from every economic, social, and ecological category. In their general overview, covering two decades of anthropological research into the relationships between ecological and cultural components, Berry *et al.* established a broad continuum that places agricultural-pastoral peoples at one end and hunting and gathering peoples at the other end. They related a number of sociocultural and ecological variables which cluster with one or the other of these two types of societies. For example, they characterized agricultural societies by a pattern of high food accumulation, whereas hunting and gathering societies were characterized by low food accumulation.

Other research has corroborated that the settlement pattern and the mean size of each of these two types of societies are quite different. Agricultural societies are sedentary and have high populations; hunting and gathering societies are nomadic and have low populations. Moreover, distinct differences in cultural factors (such as role differentiation, levels, sociocultural stratification, and socialization emphases) have been found in these two polar types. Hunting and gathering peoples have also been characterized by a low level of stratification, while agricultural societies have high levels of stratification. (*Stratification* means the division of a society into systems of status or authority, and it may take different forms and extended those forms into different areas, including family structure, political systems, and economics. Stratification can be generally conceived as "tight" or "loose" [Pelto, 1968]). Hunting and gathering societies and agricultural societies also differ in their style of socialization and child training.

The fundamental relationship between child training practices and ecological variables, in fact, was first hypothesized by Berry *et al.* (in 1959), who later analyzed the relationship between socialization and degree of food accumulation in various societies. A global measure of socialization--"pressure toward compliance versus assertion"--was established. The assertion category of low food accumulating societies (hunters and gatherers) resembled Witkin's socialization variable, "degree of separation from mother." Berry's *assertion pole* emphasized self-reliance and independence, while the compliance pole measured responsibility, obedience, and nurturance characteristics. This latter construct, as we shall see, is very similar to Witkin's socialization category of control of the assertive behavior of the child. The assertion category, then, is indicative of a field independent style and seems to correlate well with a hunting and gathering society. The *compliance category* seems to be related to field dependence and correlates well with an agricultural and sedentary society. Or, as Berry phrases it,

> In nomadic hunting and gathering societies, where population density and sociocultural stratification are low, and where socialization emphasizes assertion, we expect to find high levels of psychological differentiation (1976).

Thus, traditional cultures may be characterized as existing at differing points along an ecocultural continuum, with hunting and gathering societies at one end and agricultural societies at the other. These cultures produce traditional behaviors or specific styles of socialization, characterized as either assertive or compliant, and closely paralleling Witkin's field independent ot field dependent cognitive style, respectively.

Within the context of this continuum, Berry examined how the cognitive style of each of these cultures might be affected by *acculturative influences* from dominant cultures. The degree to which the traditional culture (whether hunting and gathering type or agricultural type) adapted to the changes imposed by the dominant culture determined the amount of acculturation which had occurred. That a culture is acculturated depends upon the degree to which three components--*influences of organization*, *influences of education*, *influences of wage employment*--have been integrated into the culture. The acculturation factor, then, is indicative of the degree of Westenization that the cultures have absorbed or the degree to which they have moved away from their own traditions. Berry's research, incidentally, seemed to indicate that *education was the most powerful* of the three acculturative influences--it had a greater effect on psychological differentiation than did either wage employment or urbanization. (Urbanization was defined as a situation of running water, sewage, electricity, and Western styles and layouts of housing.)

Berry examined two samples from ten different societies which manifested both ends of the acculturative response to a dominant culture--those that were at the high end of acculturation and those that evidenced greater resistance to the dominant culture. Five different tests of differentiation were then conducted on each sample. From the results, Berry *et al.* were able to evaluate relationships between acculturation and cognitive style and between type of ecocultural society and cognitive style. Basically, they asked: "Which of the two variables of ecocultural type and acculturative influences is more important in determining cognitive style?"

Berry found that *the most basic factor in determining the degree of field dependence/independence was the ecocultural tradition* from which the individual came. The outcomes stemmed from more than the ecological setting* in which individuals had developed than from acculturation. Although inevitable modifications accompanied acculturation, they appeared to be no more than "variations on a theme." Berry and his associates, nevertheless, found that acculturation brought about shifts in the level of psychological differentiation toward the style of the larger society with which the dominated culture was interacting. Thus, although ecocultural variables were more powerful in establishing psychological differentiation levels in an individual and a culture, the acculturation variables of education, wage employment, and urbanization were found to also bring about psychological differentiation shifts. We recall that Luria also found these variables influential in bringing about shifts; but, of course, his terminology was limited to "mental shifts".

If ecocultural type was more significant than acculturation in establishing a level of psychological differentiation, Berry then wanted to know which of the many components of the ecological index was the most powerful. Berry found that the socioeconomic or "exploitive" pattern (agricultural, hunting/gathering, or fishing) contributed most to the ecocultural index. The reason for this, Berry hypothesized, was that hunting required more perceptual differentiation than either fishing or farming:

> The detection of foods in places where they have not been and are not planted is more demanding than returning to one's fields at harvest time, but less demanding than the pursuit of moving game. In the extreme case of hunting, both food resource and human consumer are in a constantly moving relationship with one another, changing cues and context minute by minute, while in the case of farming, both resource and consumer are in stable settings (Berry, 1976, our italics).

In addition to the exploitive pattern, two other ecocultural components were found to influence cognitive style. One was Pelto's construct of sociocultural "tightness", or "looseness", a variable composed of political stratification, social stratification, and family organization. Berry interpreted this construct as the degree to which an individual feels pressured into a tight, concrete role stratification within the domains of politics, society, and family, as opposed to a more loosely or atomistically stratified society. Sociocultural tightness/looseness seemed to have a significant bearing upon sexual differences in field dependence and independence, as well. The other ecocultural component influencing cognitive style was *socialization*, which seems to correlate well with Witkin's construct, *field independence/dependence*. Berry found a relatively high level of correlation of socialization style at the sample level, but a low correlation at the individual level, raising doubts about the validity of its relationship to cognitive style. As mentioned earlier, other studies have found that socialization appears to be an important determinant of field dependence/independence. Thus, the evidence that socialization *is* a significant participant in the generation of cognitive style remains inconclusive.

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*Ecological setting does not mean merely the physical ecology of the environment. Rather, it encompasses the exploitive pattern of the culture, such as whether it is a hunting, fishing, or agricultural society; the settlement patterns; and the mean size of the community. In short, the ecological setting consisted of both natural environmental variables and socioeconomic variables. Cultural variables included political stratification, family organization, and socialization emphases.

Another important influence Berry found was "acculturative stress", the amount of psychological disturbance that accompanies the forces of acculturation encountered by individuals and cultures that are faced with Western domination. Berry developed paradigms for assessing the degree of acculturative stress experienced by his samples. These measured the amount of *psychosomatic stress*, the degree of *marginality*, and the *attitude toward either traditional or modern lifestyles*. *Marginality*, a concept originated in 1928 by Park and elaborated by Stonequist in 1937, for many years was criticized as being too general and fell into disfavor. Recently, however, it surfaced as a worthwhile perspective, attempting as it does it explain the psychological and social characteristics of persons or groups who emerge from a conflict between two cultural systems, but who remain marginal to both the dominant culture and the subculture.

Another component of acculturative stress is the *attitude toward acculturation*. When cultures clash, or meet, there are four possible results: *integration*, one in which the cultures peacefully blend; *assimilation*, in which the traditional culture does not retain its strengths and moves closely into the dominant culture; *rejection*, in which the dominant culture is refused and the traditional values are strongly maintained; and, the final response, which is not really chosen consciously, according to Berry, *de-culturation*. These results are similar to those that Bateson discusses in "Culture Contact and Schismogenesis" (*Steps to An Ecology of Mind*, 1972). Although acculturation in many instances causes acculturative stress, a mediating factor is the level of psychological differentiation maintained by an individual and his culture.

Berry finds another factor besides psychological differentiation to be equally, if not more, important in the inducement of acculturative stress: simply, whether there is a great *discrepancy* between the ecocultural system of the acculturating individual or culture and that of the dominant culture. Where there is a great difference in ecocultural types, likely there will be much greater psychological stress. It is important to note that the acculturative stress is not automatically the result of two cultural groups coming into contact. Rather, Berry hypothecizes that the important variable is the *degree of difference* in the groups.

Finally, regarding the development of acculturative stress, Berry remarks that there is probably a pattern to the growth and then subsequent diminution of acculturative stress. What seems to occur is that as a group moves into contact with another group--and here the assumption is that the acculturating group is greatly dissimilar to the dominant group--at first the acculturating group experiences a great amount of acculturative stress. But as the group members change and become adapted to the dominant culture, either through integration or assimilation, the amount of stress they experience decreases, not unlike the fairly common culture shock type of transition.

Berry's work may explain why the evidence derived from research on sex and psychological differentiation has been so contradictory. Goldstein and Blackman (1978) reported that early cognitive style research found females to be more field dependent than males. Since that time, however, findings have tended to conflict. Berry found that the differences vary according to the economic and stratification differences of each culture. In tighter, more stratified ones, sex differences disappeared or were reversed. According to Berry's interpretation, in cultures which tightly control certain members and whose roles are differentially valued (usually downwardly), sex differences will appear. Thus, it is not just a matter of role differences, but of role valuation. In his earlier studies on the Eskimo (Berry, 1966), Berry had found that equality of sexes was a social fact. An Eskimo proverb, in fact, implied equal role valuation and respect: "A man is only as good a hunter as his wife is a seamstress." Males and females in loosely stratified cultures, then, performed equally well on differentiation and perceptual tasks.

Berry's work also has replicated a well-documented finding in other cognitive style research--that of age differences in differentiation. For all of Berry's samples, developmental increases in cognitive style from childhood to young adulthood were apparent. Furthermore, in later years cognitive style performance seemed to decline. Jahoda (1970) also found this to be the case in Nigeria.

As has been noted, acculturative stress may be mediated both by levels of psychological differentiation and by the degree of cultural similarity between contacting cultures. In a hypothetical situation, for example, in which a highly differentiated culture has a low degree of cultural similarity with the dominant culture toward which it is moving, there would be some uncertainty with regard to predicting the amount of acculturative stress the inferior culture would experience. In the long run, however, Berry's model suggests that the cultural differences would overshadow the psychological differentiation levels. That is, if an individual were field independent and yet his cultural background conflicted greatly with the dominant culture, he would experience acculturative stress. But, he would not experience as much acculturative stress as he would have if he had been field dependent.

Previous to Berry's work, the primary antecedent of differentiation was considered to be socialization style--the quality of infant nurturance given by an individual's parents. Berry's study, ranging into many cross-cultural contexts, has not only enriched the theoretical perspective of cognitive style, but has also shown that several other variables are productive of psychological differentiation besides mere child care. He established a new set of cultural elements to co-vary with differentiation, including sociocultural stratification and its broader ecological aspects--specifically, the level of subsistence at which the society operates. Furthermore, Berry has shown that the acculturational variables, especially education, also contribute to cognitive style. Thus, from the previous limited understanding of the socialization variable as the main influence on cognitive style, Berry has developed a powerful theoretical position which includes two additional major variables--ecocultural type and acculturative influences, with the former primarily represented by exploitive patterns, sociocultural style, and socialization, and the latter represented by the exploitive patterns, sociocultural style, and socialization, and the latter represented by the extent of education.

Other researchers have uncovered connections between cognitive style and ethnicity. Canavan (1969), Cohen (1969), Ramirez and Price-Williams (1974), and Buriel (1975) have noted linkages, and some have claimed that Mexican American and black ethnic groups are more field dependent than white Americans (Ramirez and Castaneda, 1974). If these same subpopulations are so in need of remediation, an important question to ask is: Has the style of instruction, perhaps throughout their school experience, been at odds with their own cognitive style?

Educational Implications of Cognitive Style Research

Martens (1977), in a study of students from nontraditional backgrounds, found that students who scored at or below the 33rd percentile on admissions tests had significantly greater frequency of field dependence than regular academic students who scored at or above the 67th percentile. In addition, field dependent students illustrated preferences for instruction which (a) involved social interaction and stressed individual attention, and (b) provided structure to the environment (this means they liked classes with structure such as course outlines and so forth). Field dependent "new" students, however, did not prefer being involved in social interaction nor did they specifically request individual attention. Martens also found that field dependent students, whether they were "new" (those scoring at or below the 33rd percentile) or not, preferred academic majors that emphasized interpersonal skills and which involved writing and discussion. This was not surprising since Witkin had found in 1965 that subjects labeled field dependent did "less well at solving problems which require isolating essential elements from the context in which they are presented and using them in different contexts, as, for example, the tasks employed by Duncker in his studies of functional fixity" (Martens, 1977). Krashen (1975) found that no matter what the subject, be it foreign languages or reading, cognitive styles and time are factors to be taken into consideration when deciding whether to use a deductive or an inductive approach to teaching.

Given Berry's findings concerning the ecocultural background of individuals and cultural groups, the implications for education look quite large. Curriculum designers, instructors, and counselors must take into consideration an individual's cognitive style (whether it related to field independence/dependence, cognitive complexity, control mechanisms, conceptual style, reflection-impulsivity or integrative complexity) and an individual's ecocultural background. This is essential since we now know that there is a correlation between exploitive patterns of culture and level of psychological differentiation of a people. These socioeconomic variables evidently do affect an individual's level of field dependence or independence (or perhaps other cognitive style constructs).

If Berry's hypothesis that cognitive style is partially determined by the sociocultural tightness/looseness of the systems is correct, then attempts to change individuals' cognitive styles must take into consideration the sociocultural tightness/looseness of the cultural milieu. That is, if we assume that sociocultural looseness will foster field independence, then literacy development programs must attempt to structure those programs in a "socioculturally loose" manner. Of all the literacy models we have studied, perhaps Paulo Freire's model comes closest to fitting this criterion.

Another implication arising from Berry's work on cognitive style and ecocultural variables suggests that perceptual training in hunting/gathering societies has helped those individuals develop field independence. Perhaps training involving field trips, hands-on experiences, lab work, and so forth, may foster field independence in adult students attending literacy programs.

Comprehension

When we talk informally and nontechnically about a literate person, we usually mean that such a person can comprehend the written word. Comprehension, then, is a key process for remediation experts. Comprehension, however, is quite complex, possessing as it does many varied, overlapping aspects which impact "reading for understanding": meaning and inference, conceptualization, and reasoning power. Before examining the relationship between comprehension and reading, a more generic understanding of comprehension should be established. Comprehension is most generally taken to mean the situation of understanding something completely. This understanding results from a learning process. Indeed, the purpose of any educational process or learning act is not just to learn new information but to integrate it with already known facts in such a way that "comprehension" occurs. Comprehension, therefore, is a higher order type of learning that creates a new meaning for the learner, a meaning that is broader, more connected, and more integrated with all of his previous knowledge.

This connectedness aspect is crucial to the process of comprehension because it means that all comprehension involves old knowledge as a starting point. This is reminiscent of Bertrand Russell's comment about knowledge--that experience has to precede description. Put another way, nothing is comprehended until it is connected in some way to something that we already understood. Shown an illustration of an unknown object, for example, and asked to guess its function, one will not be able able to do so until already familiar information is added.

Comprehension, therefore, rests on two assumptions:

(1) It depends upon an association process between old and new information;

(2) It often exists in hierarchical levels...i.e., new data can change an understanding and cause it to move to a higher level which subsumes the information of the previous level. This is why we refer to comprehension as being "broader" or of a "higher order" level of knowledge (Krathwol et al., 1964).

Meaning and Inference

In the last ten years, cognitive psychologists have been examining the nature of the association process of comprehension and have recognized that inference is one of its predominant processes. Gregory (1970) notes that the significance of inferring was distinguished by Helmholtz over a hundred years ago but that with the move by psychologists away from the cognitive and into the behavioral processes early in this century, it has only been recently that inference has regained respectability among scholars.

Inference is comprehension. By that we mean that the comprehension which occurs when an old concept is linked to a new one comes about because the mind is able to infer a third concept, or a new meaning, from this association. The inferring is the unconscious deductive process which draws new, or higher order information, from the juxtaposition of the old with the new. The process of inference is an unconscious deductive process which should not be confused with conscious deduction operating through rules of logic. Comprehension capitalizes on both processes. Deduction will be treated below in more detail. When inference is complete, the mind senses through the "ah, ha!" reaction that it really has comprehended these two bits of old and new knowledge. Comprehension results from the inference process which, in turn, enabled the mind to transcend the level of understanding upon which it apprehended the new and the old pieces of knowledge. Once the mind has risen to the higher level of understanding, one may say that comprehension has occurred, along with a simultaneous feeling of satisfaction. Perhaps comprehension is satisfying because it feels as if it is a transcental process, a movement to a higher understanding, or, at least, to a more "right" understanding of things.

The notions of "understanding" and "meaning" have been used thus far with little exactness. This has been deliberate; the effort was made to speak in a generic manner about comprehension before giving more technical examples of the different sorts of meaning or understanding which comprehension entails. In the meantime, however, it seems appropriate to make clear that comprehension includes linguistic aspects of meaning such as semantics, syntax, lexicon, discourse, and context, and that cognitive processes such as conceptualization, classification, deducing, imaging, content, and even, perhaps, hypothesizing are involved as well. Finally, and importantly, cultural beliefs can influence or change meaning. It is easy to see, therefore, that comprehension is no simple matter of looking up the dictionary definition. The linguistic factors, the cultural background, and the cognitive processes involved in representing the item will determine its meaning.

For example, we may examine the distinction between the meaning and the significance of an utterance. If we have a sentence such as:

(1) THE MEN CHOPPED AT THE TREE TRUNK.

we see that the sentence has a semantic/syntactic meaning which anyone who speaks English can understand. Its significance, other than the fact that it was used to illustrate a point about language, is lost.

One way that the sentence may gain significance is if it is read in its larger context, such as a story about woodsmen who are felling a tree in order to make a raft to save someone's life. If that were the case, and the sentence (1) was preceded by:

(2) THE PRINCE SELECTED A TALL PINE AND ORDERED THE WOODSMEN TO FELL IT.

then the "tree trunk" of sentence (1) would be an identifying noun referring back to its "anchor" referent (Vendler, 1967)--in this case "pine"--in its antecedent sentence, which would in turn be referring back to the concept of a raft in earlier sentences. One way context is established, then, is through the bridging process of linking nouns and their pronouns, to previous referents by means of the cognitive, mental process of drawing inferences.

This last phrase is italicized to emphasize how intricately the cognitive and the linguistic interface to yield what we so facilely term "comprehension". In this case, for example, the mind infers a meaning from linguistic elements. This cognitive process of inference at work on a paragraph of words creates a context that establishes a kind of meaning known as significance which, together with the semantic/syntactic meaning of the paragraph, produces its ultimate comprehension.

In summary, comprehension appears to be a pithy matter of tying one referent to another, finally arriving at the end point. Before claiming comprehension as the end point, however, one should investigate several questions. First, understanding that significance is important to meaning and comprehension, one should ask if there are other ways of determining significance besides building referential bridges. Secondly, is the bridging process as neat and simple a matter as it seems? And, finally, is bridging dependent more on cognitive abilities or on linguistic structure?

An argument for the language basis for inference is held by Bever (1970), who points out that every language has referencing aids such as pronouns and definite and indefinite articles. Pronominalization rules for these structure sentence understanding. Sentences such as the ones below, however, show that even such rules do not suffice in every case:

(3) WHEN HE ENTERED IT, JOHN WAS SURPRISED TO FIND THE ROOM EMPTY.

(4) THE BUTLER TOOK IT TO THEM WHEN THE MAN ASKED FOR COFFEE.

The first sentence would probably be understood if previous sentences had established that John was the same as "he" in the first clause. In the second sentence, however, the "it" may mean pie, money, or "it" may refer to coffee, and it is doubtful that prior sentence discussion could reveal the pronoun's antecedent.

Another example of the inadequacy of language theory to account exclusively for the phenomenon of inference in language is the use of inference in grasping the meaning of certain restricted verb-object classes. This idea is very different from referential bridges, but it does illustrate the point of whether meaning is linguistic. Katz and Fodor (1963) proposed that certain verbs exist which have underlying "selectional restrictions" on the type of object with which they can be paired and that, therefore, meaning (in this case inference) becomes more of a linguistic phenomenon than a cognitive process. The verb *to fly*, for example, is restricted because only certain grammatical objects can go with it, such as planes, birds, and clouds. The difficulty, however, as Savin (1973) and Miller (1977) point out is that in certain contexts objects which are ruled as being out of the select class may fit very well with the "improper" verb:

(5) THE SMITHS SAW THE ROCKY MOUNTAINS FLYING PAST THEM.

Thus, although some linguists (Bever, 1970; Vendler, 1967; Katz and Fodor, 1963) have argued that it is the structure of language which allows referencing and inference to take place, most would say that this is not so. Rather, it is the cognitive process of inference acting upon the immediate temporal situation and cultural context which surround a language phrase which allows meaning, and thus comprehension, to be created (Johnson-Laird, 1977; Johnson-Laird and Wason, 1977; Clark, 1977).

Clark, for example, shows that it is the speaker's respect for the speech conventions of the listener's culture which enables the listener to establish the correct links between the sentences which he hears. In the sentences:

(6) I MET TWO PEOPLE YESTERDAY. THE WOMAN TOLD ME A STORY.

the listener infers that the other person is not a woman because the speaker begins the second sentence deliberately with "the woman". This is a cultural convention that Grice (1975) labels *implicature*, and as such it is an act of conversation that "though conveyed by language and a necessary part of the intended message, draws on one's knowledge of natural objects and events that goes beyond one's knowledge of language itself" (Clark, 1977). In other words, implicature works because the speaker and hearer share a cultural knowledge which allows the hearer to imply information from what the speaker says.

In the above sentence (6), therefore, the only reason the hearer deduces that the other person is not a *woman*, as opposed to not a *child*, or not a *tribal member*, or perhaps, even not a *friend*, is because of the cultural rule of inference which is grounded upon common cultural experience. In some societies we can imagine that inferring the other person to be a child would be correct, because children always travel with women.

Earlier, we questioned whether there was not another component of the significance of an utterance besides its referential aspect. Austin (1962) asked more or less the same thing and concluded that knowing a speaker's *intention* was just as significant as knowing to what he was referring. He termed this the statement's *illocutionary force* and argued that without it a listener would not grasp the aims of the speaker, and would, for example, respond inappropriately to certain kinds of statements. In the utterance:

Q. CAN YOU TELL ME THE TIME?

A. YES.

the response interprets the interrogative as being a question of ability rather than a request for the time. The responder does not comprehend the illocutionary force of the utterance and thus misses its significance. Again, the reason that inference produces comprehension is this is more because of a shared cultural understanding regarding the intention behind the statement than because of some automatic rule of human language (Stauffer, 1977).

Kaplan (1978) points out that the "exophoric" controls which can govern the illocution of a statement are often social and cultural, such as the following sentence which can carry different illocutionary values depending on the sociocultural context.

(8) YOUR TIE IS CROOKED.

If it is a father to a son, it implies "straighten your tie." In another culture, or with a different status between the addressor and addressee, it may be a ritual insult "You are so inept you cannot tie your tie straight."

Just as with the referential aspect of significance in meaning, illocutionary force involves cultural knowledge. It is not simply a device of language; rather, it is a tool common to all languages which depends on extralinguistic value to give it force.

Moreover, again paralleling the referential component of significance, illocutionary force depends for its functioning upon the cognitive power of inferencing within the hearer's mind. Johnson-Laird and Wason (1977) put it strongly:

> It is sometimes not appreciated that determining the illocutionary force of an utterance is *always* a matter of inference...whether a speaker really means what he says or is merely joking,...is something that invariably requires a listener to take into account his knowledge of the speaker, the linguistic context, and the general circumstances of the utterance (their italics).

Thus, we see that both referencing and illocutionary force are language devices which impart an aspect of meaning we call significance through the cognitive process of inference acting upon social and cultural knowledge of speakers and hearers.

Language meaning, however, may be intimately tied to culture and cognition in even larger ways. Kaplan's (1967, 1968, 1972, 1976, 1977, 1978a, b, c, d) theory of *contrastive rhetoric* holds that different languages follow different *strategies of development* in discourse. Not only may comprehension be hindered owing to illocutionary or referential misunderstandings from sentence to sentence, but whole paragraphs and pages of rhetoric may be unclearly grasped because the *intersentential* syntax of one language may contrast so strongly with that of another.

Kaplan argues that whereas the topic of a discourse is primarily semantic, and thus is lexically translatable, the *focus* upon the topic depends upon the "finite possible alternatives available in the syntactic system." A Spanish speaker who is accustomed to the use of a certain number or frequency of syntactic mechanisms (such as temporal and spatial chains, pronominalizations, synonyms, conjunctions, appositions, parenthetical inclusions, adjectivizations, etc.) in Spanish composition, but finds a very different set when he reads English discourse, will be expected to have difficulty in clearly following the topic, i.e., in focusing. We can imagine a Spanish speaker who is used to focusing a telescope aimed at the moon by twisting the dial to the left. When he arrives in England, his host offers him the telescope, however, and he twists its dial to the left. Rather than sharpening the focus he causes it to blur more! Why? Because English telescopes focus to the right. Thus, our visitor will have quite a hard time viewing the moon in England until he adjusts to the English method of focusing. Kaplan contends that language topics offer similar problems as focusing telescopes, and, of course, the results can be worse even for a non-native language speaker because he may be trying to focus on topics that he has never seen or known.

In sum, although the mind's unconscious, cognitive power of inference helps a person comprehend the meaning of language, it nevertheless must be supplemented by cultural experience. Inference does not yield comprehension by itself.

Conceptualization

Another power of the mind which aids it in comprehending the world is the ability to hold concepts. But what, indeed, is a concept? How are concepts formed? Some thinkers maintain that concepts arise in an unconscious manner in the mind rather than through a logical process. Einstein, for example, viewed concepts as "free inventions", "freely selected" (Thuillier, 1979, p. 24). Furthermore, the axioms or basic laws of a theory were guesses--they could not be deduced *or* inductively inferred from experiences or observations (Ehler, 1979, p. 4). C. L. Hull, an early conceptualizer, would have agreed. Johnson-Laird and Wason also support the notion that concepts arise in nonlogical ways: "concepts tend either to be picked up willy-nilly without conscious effort, or else to be acquired more deliberately by word of mouth" (1977, p. 180). Conception composition is another matter. What is the *structure* of a concept? In their book, *Thinking: Readings in Cognitive Science*, Johnson-Laird and Wason (1977) have discussed the two basic interpretations associated with conceptual thinking. In the terminology of taxonomy theory, one argument is that concepts are *monothetic*. This view of concepts was held by such early thinkers as Hull (1920) and Vygotsky (1934). Essentially, this view holds that a concept is defined by a single element. In other words, if one were to examine, for instance, a category of objects such as balls, to define a ball one would look for a single something held by every "ball". Implicit in this interpretation is the notion that ultimately every idea or concept or category or conceptual lumping can be distinguished from any and all others by one critical difference. The monothetic position, therefore, is a simpler view of what a concept is than that of the more complex and contrasting polythetic view.

By introducing concepts from Boolian algebra to develop a logic of attributes, cognitive scientists began to expand on the monothetic view. Apparently, some concepts could be formed not just by one common instance or element, but by several. Yet, this algebraic approach to conceptualization retained a monothetic air since it depended on simplistic logic: the relationship between multiple elements within the concept had to be governed by the logical rules, and eventually the instances would be broken down into a common element or a single instance.

Johnson-Laird and Wason argue for a polythetic view of concepts. First, their definition of a concept makes such a stance self-evident; and, secondly, it is their opinion that the monothetic tradition of concepts has given rise to unrealistic research which has "failed to elucidate the way in which human beings actually acquire new concepts." Laboratory experiments, from their vantage point, have not approached the reality of conceptual attainment.

The polythetic view holds that a concept has more than one common feature which causes its members to be judged within the boundaries of the concept. Moreover, if a concept has several features, they will be related in some way; there will be an internal relational structure. Thus, Johnson-Laird and Wason (1977) argue that "real life concepts are seldom composed of Boolian combinations of otherwise independent attributes." Translated, this means that concepts are not only composed of several components, but that their relationship is much more complex than the simple types of relations expressed in the logic of Boolian algebra.

The polythetic view, for example, would hold that if you have a concept such as bird, there are several elements involved in "birdness" which make a certain instance or a certain example such as a robin fall into the category of bird. The monothetic view, on the other hand, would say that there is only one aspect that would make up the category of birdness, perhaps, for example, wings. And yet if there is only one example--for instance, the bat (a mammal)--the monothetic view collapses. The one feature that is common to some examples of a concept may not be common to other examples. Witkinstein, in 1958, pointed out that there is very seldom any one thing common to all members of a set. You may find similarities or relationships, but to find one feature (a perceptual feature, a functional feature, or a semantic feature), which is held by every member of a set is well nigh impossible.

For years, people tried to believe in the existence of monothetic concepts and monothetic categories. We all know that it is much easier to think in dichotomies than in complexes. Even the science of classification, which goes back to the ancient Greeks and continues to this day in the modern taxonomy of every discipline of science, has problems in establishing clear categories (Sokal, 1977). Only recently, with the introduction of computers that are capable of developing symmetric matrices of similarity and/or dissimilarity coefficients, has it been possible to develop truly rigorous classifications. And yet such breakthroughs fail to solve the problem of human classification.

Recent research, nevertheless, has begun to explain how humans conceptualize and how a concept is different from an object. While Bowerman (1977), Rosch (1977), Nelson (1977), and Winston (1977) all discuss conceptualization, Bowerman specifically makes the point that objects and things are more monothetic while concepts are polythetic. Objects such as a "ball" or a "cookie" may gain their definitions or their meanings because of similarity in a single attribute such as shape or function. A concept, on the other hand, requires several types of similarity or several attributes before it is recognized for what it is. In other words, a concept requires *a complex of attributes or features in order to gain its gestalt definition/meaning*.

If concepts are indeed polythetic, the question of what form concepts take in the mind is still unsettled. Merely stating that a concept is composed of a certain number of elements or features leaves unspoken the whole issue of shape, particular combination, or *matrix* of these elements. Are concepts logically arranged in some Boolian set of disjunctive or conjunctive operations? Or, are they arranged in another kind of structure that is more complex? The latest scientific answer suggests that concepts are composed of attributes in only certain sorts of combinations; these combinations are not arranged arbitrarily. For example, consider the concept of *bird*. A bird has feathers, a beak, wings, claws. If these four features were arranged arbitrarily, such an arrangement would imply that it does not matter how long the wings are in relationship to how long the beak is, nor would it matter that the legs of the bird were shorter than the wings. Since they are not arranged arbitrarily, the attributes of the concept, *bird*, do exist in a definite structure within the minds of those who hold that concept.

Theorists such as Rosch (1977) and Bowerman (1977) propose that concepts are structured in terms of discrete prototypes. Rather than having a mere list of features somewhere in the mind for certain concepts such as *bird* or *tightness*, we may have a sort of ideal instance or ideal type. Some theorists, in fact, maintain that this prototype is an actual *image* held within the mind.

The nature of the prototype has proved to be a popular topic of discussion among cognitive scientists. Prototypes may contain information about either the perceptual characteristics or the functional features of items (Nelson, 1977). Convincing evidence supporting the prototype theory comes from the fact that we can usually agree on good examples of concepts. For example, we would probably agree that a robin is a better example of "birdness" than is a chicken. In other words, the robin is the prototypical bird and the chicken is not.

Another piece of evidence supporting the idea of prototypes comes from Bruner *et al.* (1956), who found that it was much easier for people to decide which color on a scale of orange hues and tones was the proper color for an orange (the fruit) than it was for these same subjects to determine the outside limits of colors that would be improper for an orange. It seems that it is a great deal easier for people to find an ideal instance or a prototype than it is to agree on what does not belong within the boundaries of a concept. Understanding prototypes and boundaries of a concept may be a matter of having had similar kinds of experiences (of course, including similar kinds of *cultural* experiences) since "the acquisition of...concepts occurs in an implicit or... unconscious manner" (Johnson-Laird and Wason, 1977). Rosch (1973) has argued that some prototypes, especially the physiologically determined ones, are presumably naturally derivative. Mary Douglas (1968), in her book Natural Symbols, gives supporting evidence by showing that all cultures derive very similar natural symbols from the common physiological elements of all human life, i.e., blood is often symbolized by the color red. Rosch also suggests that the simple frequency of certain kinds of experiences "may make some items salient in a not yet organized domain and may influence how that domain comes to be divided" (1973). Cultural experience, then, may have a great deal to do with the best exemplar of a concept held within the mind of any one person.

What this means for education is that learning is culturally based at the core. If before we were thinking that the "cultural differences problem" of education could be solved by simply teaching people in the same language so that they could communicate, we now can see that even using the same words does not necessarily mean that the words we are speaking are communicating concepts we are thinking. And to carry this even further, we could say that communicating or talking about the same concepts does not necessarily mean that the same prototypes are being communicated.

Deduction and Induction

Part of our prototype of the literate person involves the power to reason, or reasoning ability. This power involves the processes of deduction and induction, the final two cognitive powers that play a key role in the comprehension process. Thus far comprehension has been viewed as the essence of literacy, and central to much of the literature is the attempt to answer such questions as: "Do all cultures reason in the same way?" "Does the term 'reasoning' mean the same to everyone who uses it?"

The usual philosophical start point in a discussion on reason involves the distinction between inductive and deductive reasoning. Deductive reasoning can be described informally as that reasoning which moves from the general to the particular. Inductive reasoning, the opposite, moves from particular instances into a general statement. More formally, a cognitive scientist might suggest that deduction operates by processes of inference from certain stated premises. These processes are called logic. Induction, on the other hand, is not logic since its purpose is to establish a premise upon which logic then operates. To put it another way, logic is the process that follows from a stated premise; it is not the process that gives rise to a premise or an hypothesis.

The analysis of logic has a much longer history than does induction. Deductive logic, in fact, is possibly more complex, having as it does three main branches that have received great attention: propositional logic, quantificational logic and relational logic.

Propositional logic--Concerned with inferences that depend on the interconnections between propositions or statements, propositional logic consists of three types of interconnections or relations between statements: and, or, if...then. Examples* of this mode of inference (modus ponens) can be expressed in abbreviated form thus:

If P then Q

P

.'. Q

or in a statement such as:

If John is tall, then Charles is short.

John is tall.

Therefore, Charles is short.

To perform elementary logic, one would have to think to the conclusion that "Charles is short," given the first premise that if John is tall, then Charles is short, and also given the information that John is tall. Johnson-Laird and Wason (1977) suggest that most people use this type of inferencing.

Modus Tollens, another mode of inference, is the negative of the modus ponens form of inferencing. It begins the same:

If P then Q

Not Q

.'. Not P

or, represented in a sentence:

If John is tall, then Charles is short.

Charles is not short.

.'. John is not tall.

The implications for literacy development lie in the application of positive propositional statements, since it appears that most Western adults perform less well when negative propositional statements are part of text material. When the affirmative form is used, prose and tests are probably more comprehensible.

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*The examples in this section are taken from Johnson-Laird and Wason (1977, pp. 413-419).

Quantificational logic--Embracing propositional logic, but going further, quantificational logic is broader in that it is concerned particularly *with deductions based on quantifiers such as all, none, or some.* The type of inference most used in quantificational logic is the simple syllogism:

All B are A

Some C are B

∴ Some C are A

or

All trains from here go to Uxbridge.

All trains that go to Uxbridge stop at Ickenham.

∴ All trains from here stop at Ickenham.

Quantificational logic is concerned with how information is deduced from statements when made more complex with quantifiers. An interesting question is whether languages and cultures which frequently make absolute judgments--i.e., those which use the quantifiers all, none, et cetera, more often--use the simple syllogistic mode of inference more often than the propositional modes of *modus ponens* and/or *modus tollens*. Research and review studies from several researchers indicate that individuals perform syllogistic reasoning tasks much better when the tasks are closely related to the subjects' experience. Van Duyne reported that "degrees of realism affect performance in a continuous, linear way" (reported in Johnson-Laird and Wason, 1977, p. 153). Luria's work (1976) accords with this experience.

Such claims are, of course, directly in conflict with the Piagetian model which, as we have seen earlier in this chapter, was ordered, structured, universal, not in any way tied to realistic or cultural experience. Piaget, in one article (1972) altered his stance slightly, suggesting that formal operations are operative within aptitude or interest areas. (Whether these interests relate to cultural experience, he failed to say.) Cognitive structures would operate through different codes, and these codes would be a function of the content within certain interest/aptitude areas. Piaget still holds that formal operations are free of concrete content, but he argues that "it is one thing to disassociate form from the content in a field which is of interest to the subject and within which he can apply his curiosity and initiative, and it is another to be able to generalize this same spontaneity of research and comprehension to a field foreign to a subject's career and interests" (Piaget, 1972, p. 11).

The simplest form of logic uses linear syllogisms. Several theories have arisen about how the mind handles information that comes to it in syllogistic form and how the mind arranges information in syllogistic form in order to think deductively. The "mental operations" theory, developed by Hunter, attempted to explain a thought process which includes "abstract mental operations." These operations often include a conversion of the information into statements that have a canonical form, that is, with the syllogism arranged in a simple matrix form. William James also argued that the mind inferenced or deduced in such a way.

A second linear syllogism theory is the theory of visual imagery, developed in 1965 by DeSoto, London, and Handel. They suggested that linear syllogisms are solved by "combining the premises into a unitary representation which takes the form of a visual image" (Johnson-Laird and Wason, 1977, p. 77). According to this theory, the spatial character of composition seems to be significant in the ability to reason.

The final theory dealing with linear syllogisms is one called a linguistic comprehension theory. It has been employed extensively by H. H. Clark, who argues that reasoning is simply a linguistic process and that if one understands the kind of process the mind uses in processing language, then "spatial arrays" of premises propounded by visual imagery theorists are just not necessary.

Which of these three types of syllogistic reasoning is most common in the process of deductive logic--linguistic, spatial, or "mental operations?" Current theories (Johnson-Laird and Wason, 1977, and Erickson, 1973, quoted in Johnson-Laird and Wason, 1977) have been able to integrate all three models of inferencing in developing holistic theories of how the mind deduces.

Relational logic--A third type of logic, relational logic, is used when statements of comparative relation between two things or ideas are made using such words as bigger, largest, smallest, weakest, et cetera. Relational logic takes the following forms:

$$\begin{array}{l} x \; R \; y \\ \underline{y \; R \; z} \\ \therefore x \; R \; z \end{array}$$

or, using words to explain the relationship:

x taller than y

y taller than z

∴ x taller than z

Even though propositional, quantificational, and relational logic have been studied intensely in the West, "there is not much of a consensus about the psychological mechanism underlying deduction or even about so fundamental a matter as whether human beings are basically capable of rational inference" (Johnson-Laird and Wason, 1977, p. 76, our italics). Rational inference and logic, of course, have been placed on a pedestal and worshipped since the early examiners of the nature of human thought--e.g., Tylor, Levy-Bruhl, and Frazer--propagated the view that the central distinguishing factor between primitive civilization and modern civilization resided in the quality (i.e., logic) of thinking.

What then do we know about the absence or failure of deductive logic in certain people? Begg and Denny (1969) posited that errors in deduction arise from an "atmosphere effect" which predisposes individuals to accept erroneous conclusions simply because the premises are stated in certain ways. For them, the key to successful logic lies in *not being seduced by certain forms of stating premises*. Similarities between the conclusion and a statement in a premise can produce a *seductive linguistic* effect that the mind does not resist--i.e., the use of certain words prompts the choice of conclusions containing the same words.

A nonlinguistic theory of deductive failure suggests that "*mental operations*" are at fault. Sometimes individuals will convert or switch premises, causing invalid inferences (i.e., "All A are B," therefore, "All B are A.") (Johnson-Laird and Wason, 1977, p. 84).

In addition to this mental conversion error, another significant mistake is that of making inferences about items based upon similarities of behavior. Chapman and Chapman (1969, quoted in Johnson-Laird and Wason, 1977) argue that this predication or behavior error reflects an erroneous jump to conclusions. For example:

> Nuns dress alike.
>
> Those twins dress alike.
>
> .˙. Those twins are nuns.

Because the predicate indicating the behavior of the subjects is referring to both nuns and twins--that is, both nuns and twins *dress* alike--the incorrect conclusion is that the subjects are alike or the same. A person jumps from an equation of similarity in the predicates to the conclusion that, therefore, the subjects are equal. Schizophrenics have been found to make this sort of error in reasoning (Johnson-Laird and Wason, 1977). In the area of personality judgments, normal persons make similar mistakes (Shweder, 1977). Observing persons who resemble each other in a certain manner of dress or behavior, normals may assume that similarly dressed people also possess the same kind of personality. Shweder terms this a *confusion* between likeness (or resemblance) and likelihood (or correlation).

Inductive Reasoning--Through an inductive method of reasoning one can arrive at any hypothesis or a set of premises. To test the validity of the hypothesis, the conscious inferencing process of deduction is then used. Does the movement from the particular to the general (characteristic of induction) proceed by logic or by intuition? Imagine observing the behavior of a flock of birds in a tree. How is it that from this process of observation an hypothesis arises in the mind about some aspect of the behavior of those birds?

Although Bacon and Mill have tried to establish that induction is a logical process. the philosopher Hume early on rejected such a possibility. Carl Popper, a more recent thinker, stated a convincing case against inductive logic. Claiming that passive observation upon which a logic can operate to establish an hypothesis is a myth, Popper believes that we do not logically form hypotheses; they are not created by some strict, reasonable process of logical induction. Rather, an hypothesis about anything is always carried around in our minds and is imposed upon our observations and our experiences as we live through them. For Popper, man is not a being whose thinking begins with reason. Man is a being whose thinking begins with hypotheses; and these hypotheses are, in turn, a product of all our previous knowledge. The process whereby our hypotheses arise from our previous knowledge, then, is not a logical process. In fact, "the mistaken belief that what elevated science over pseudo-science was the 'scientific method' of finding true, secure, and justifiable knowledge, and that this method was the method of induction: /this is/ a belief that err/s/ in more ways that one..." (Popper, quoted in Johnson-Laird and Wason, 1977, p. 273).

Further support for the idea that hypotheses are not induced through a logical process comes when we review our earlier remarks about concept formation (pp. 57-63). The concept is similar to an "hypothesis" in that both are judgments about the nature of phenomena in the world, either phenomena that are actions or phenomena that are objects, and both probably arise through nonlogical processes. Both concepts and hypotheses are key components that enable a person to comprehend the world.

Once acquired, concepts and hypotheses may be hard to change or disconfirm (Mynatt, Doherty, and Tweney, 1977; Mitroff, 1974; Kuhn, 1971; Karmeloff-Smith and Inhelder, 1977); cognitive programming toward verification rather than disconfirmation (Johnson-Laird and Wason, 1977b); cognitive "biases" toward simpler, more efficient judgmental operations (Tversky and Kahneman, 1977) such as probabilistic determination based on representativeness, pattern consistencies, availability technique influenced both by cultural and retrieval factors, and "illusory correlations" including "innocent prejudices" and anchoring.

Tversky and Kahneman's work, which attempted to explain some of the reasons why the mind sometimes acts illogically, suggested that the mind uses certain modes of heuristic thinking that generally in the proper context are very helpful. Difficulties, however, crop up when these heuristics attempt to deal with abstract statistical relationships because the heuristics are not suited for handling this mode of information. It is a coding problem: the mind needs to work statistically, but what it receives is representative of available information.

The processes of logic and inference, therefore, are affected by cognitive biases, cultural experiences, and the realistic nature of the immediate context of the deductive or inductive thought. Furthermore, these appear to be represented in the brain linguistically, spatially, and "mental-operationally". The human mind, in summary, appears to be much more human and much less machine-like than we thought.

Comprehension and Reading

The difficulties encountered by culturally different adult students in acquiring or improving reading skills may be more insidious than merely the unfamiliarity of topics mentioned by Kaplan in the last section. The literature on comprehension and reading suggests a widespread, bigoted point of view. As an illustration, Elkind (1976) has summarized four requirements for successful beginning reading:

(a) a language-rich environment;
(b) attachments to adults who model and reward reading behavior;
(c) the attainment of concrete operations; and
(d) an instructional program (p. 335).

It seems to us that these items characterize who is being taught by the school to read...not who can learn. Such an insight can be gained from Elkind's statement: "Learning to read is a dull and unrewarding task, and social motivation to please significant adults appears to be a necessary, if not sufficient, factor in learning to read" (p. 335). We believe such a statement might be phrased another way: because learning to read is made such a dull and unrewarding task, social motivation appears to be more important in learning to read than it needs to be. Until effort is made to draw the motivating force of learning to read from the reading process itself, it seems unlikely that "socially disadvantaged" individuals will learn well because they will lack the significant motivating force for learning! The key to teaching the "socially disadvantaged" is to develop motivating factors for learning which are not developed socially in these segments of society. A number of socially conscious thinkers have addressed this difficulty (Freire, 1974, 1976; Ashton-Warner, Sticht, 1975, esp. Ch. 11; Mead, 1971; and Stauffer, 1977).

Perhaps a culturally insensitive point of view would better characterize this state of the art in cognitive psychology with reference to skills required for learning to read. An up-to-date example is Wickelgren, whose 1979 book on Cognitive Psychology provides us with an exceedingly narrow definition of literacy: "Technically, literacy refers only to reading and writing capacity." He addresses a limited set of theoretical issues underlying questions concerning the cognitive processes involved in reading: the point at which verbal visual inputs converge with auditory verbal inputs, whether individuals should be taught to read using phonics or the "look and say" whole word method, the graphic segmental units of reading, and the pros and cons of a speed reading course. While he gives lip service to the important role in word recognition of context-sensitive letter features and while he believes that feature systems must include units smaller than the word (p. 149), he generalizes overmuch and fails to note that many individuals have culturally different backgrounds. Adults, for example, "read to learn new concepts and propositions in our semantic memory. We want newly learned propositions to be new and useful....These new concepts and propositions we learn must be built upon (related to) the concepts and propositions we have already learned. In short, reading is understanding" (pp. 158-159). Unfortunately, Wickelgren fails to address the whole issue of content and cultural context upon which the concepts and propositions the culturally different student has already learned depend.

Muriel Saville-Troike (1978) has made a contribution which overcomes the bigoted, culturally insensitive point of view portrayed in far too many scholarly works on reading and comprehension. In her practical guide for teachers in applying cultural concepts in the classroom, she defines culture as including "all the rules for appropriate behavior which are learned by people as a result of being members of a group or community, and also the values and beliefs which underlie behaviors" (p. 1). The most useful part of her work is a guide for basic data collection for teachers' use (pp. 19-34).

With regard to comprehension and reading, Margaret Mead (1971) has written about the important relationship between character formation ("...the process by which children learn to discipline impulses and structure their expectations of the behaviors of others") (p. 67) and later academic achievement. Mead's opinion concerning affective outcomes of home intellectual interests is a valuable insight, but depressing: "Attitudes toward the importance of reading have been established for good or ill, long before the child goes to school" (p. 73). Whether the individual learns that reading affords new and rewarding experiences "...this fundamental piece of overall learning is probably determinative of whether individuals will be literate or nonliterate" (p. 69).

A number of cognitive scientists have provided insights into the relationship between comprehension and the reading process. Mackworth (1977) has pursued the "line of sight" method, which focuses on the delays and breakdowns of information processing as revealed in eye fixation during the reading process. This work points to the great importance of the short-term memory for reading: "the essence of the game is to create a temporary stabilization of fast-changing verbal situations. The short-term memory can establish a baseline for prediction only if it gives a temporary buffer store which lines up at least a short series of three events" (p. 19). This "series of events" activated in the short-term memory is what Mackworth calls the "ready store", and it is used as a predictive tool for text processing. (Mackworth points to the relationship of the ready store to the frontal lobes of the brain and the consequent importance of development of this area for the acquisition of reading skills /p. 21/). It appears that a distinction between "stimulus-bound" word callers and "self-ruled" processors (p. 19) may be drawn on the basis of the reader's ability to activate the "ready store".

Combining Mead and Mackworth's perspectives enables us to develop a more complete understanding of comprehension and reading. Since Mead's work points to attitudes about reading which motivate learning and Mackworth makes the distinction between stimulus-bound and self-ruled task performance, it is reasonable to consider a person able to comprehend and read when (1) he realizes what reading is about, (2) he is a self-ruled processor, and (3) he has the ability to learn about new things. With reference to this last point, the earlier review of cognition has already illustrated that healthy human beings, no matter their ethnic or cultural backgrounds, naturally have an ability to learn. The literature representative of the social-pathology view of minority groups (which suggests failure to use language as a tool for thought, inability to work for long-term rewards, and so forth) only turns attention away from the basic issue: the extremely intricate and complex process of literacy acquisition from the perspective of the culturally different adult student.

What we seem to have is a very confused state of the art. Different authors have different measures and different definitions for comprehension and reading. For some, reading comprehension simply means measuring the correct responses to multiple choice questions about a passage. Other cognitive scientists use more complex measurement methods which reflect a subject's ability to draw inferences about a passage rather than simply remembering the content (factual knowledge) of the passage. Shaw and Wilson (1976) argue that the measures of learning are not memory tasks, but rather ones which measure an individual's ability for "generative knowledge". A generative test does not measure comprehension so much as conceptualization and possibly creativity.

There are several difficulties encountered by reading comprehension researchers. Not only is it difficult to measure comprehension through algorithmic tests (tests which anticipate only one answer such as true/false or multiple choice questions), it is also difficult to rank order sentences used in comprehension tests with reference to their conceptual difficulty. For example, it is becoming meaningless to hear of passages in comprehension tests which were written at an eighth-grade reading level. This is because reading level tests are not scaled by cognitive factors which are being found to greatly influence comprehension.

A third difficulty with research in comprehension and reading is that there is often no explanation as to the degree to which the passage given to subjects corresponds with general experience, interests, and cultural backgrounds. Cultural factors, as we have already pointed out, significantly influence comprehension and other cognitive processes. "Standardized" reading passages given to culturally different students are probably invalid.

John B. Carroll (1977) urges the development of a comprehension scale which would reflect the composite of three types of measures: (1) writing, (2) orality, and (3) cognition. Carroll believes that if the conceptual difficulty of the written and oral components are kept at a fairly low level then the cognitive aspects could be indexed separately from the indices of the reading and language comprehension.

While Carroll believes that comprehension can be taught by emphasizing subskills, Frank Smith (1971) argues that comprehension is a total process and will only be improved when comprehension is taught rather than subsets of learning. Scoffing at reading instruction techniques which identify small units such as grapheme-phoneme relationships, decoding skills, and vocabulary building, Smith argues that the most important element in learning how to read and comprehend what one reads is not visual discrimination of small units, nor is it identification of these units, but rather it is prediction. Reading successfully is actually a process of predicting what letters, words, phonemes, morphemes, or syntactic structures are already there, or even of predicting what messages, ideas, beliefs, or content are going to come up next. Reading comprehension, then, is not a process of learning to see but a process of learning to predict.

This prediction is a process that draws upon two *contexts* of the reader: his context of language and his context of culture. To illustrate, Smith reminds us that the most common letters in the English language are *e*, *t*, *a*, *o*, *i*, *n*, and *s*. An English speaker who has absorbed this information through speaking English has a greater chance of predicting what will follow an *m* or a *p* than a non-English speaker. His capability of prediction is bolstered because his language context is the same as that of the English passages he reads. Kaplan's research reviewed earlier bolsters Smith's argument about the linguistic context aiding comprehension.

In every language words occur in certain patterned contexts. For example, in English, adjectives precede nouns. Hence, teaching the identification of words through decoding drills not only makes the exercise difficult because such words are devoid of their context; but, in addition, the student tends to ignore the value of context in comprehending words. Smith considers this emphasis on word identification exercises more harmful than helpful.

For Smith, linguistic comprehension derives from the reader's prediction of meaning from the different contexts which occur as he moves through a body of prose: contexts of letters which yield words, contexts of words which yield clauses and sentences, contexts of sentences which produce greater units of meaning, etc. Therefore, because contexts are found to create meaning and comprehension, reading and instruction should emphasize the value of contexts and teach students how to predict from them.

Other researchers (Sticht, 1972; Perfetti, 1977; Guthrie, 1977) would not agree with Smith. Teaching decoding *is* the best way of teaching comprehension, for comprehending language is the basis of reading comprehension (Sticht, 1972). Decoding speed correlates well with comprehension (Perfetti, 1977; Guthrie, 1977). Magiste (1979) replicated the earlier finding that monolinguals both decode and encode up to 25 percent faster than bilinguals. She discovered, in addition, that it is easier for bilinguals to understand (and comprehend) speech and reading than it is for them to respond to speech, indicating that decoding information may be faster than encoding information.

Which of the two approaches is more conducive to learning is difficult to say, at this point. The contextual approach to comprehension is relatively new, and few projects have put Smith's theories under the scrutiny of research. Only recently have cognitive scientists begun to focus on context as an aid to comprehension. Bransford and Johnson (1973) and Dooling and Lachman (1971) have shown that if subjects are kept from knowing the theme of a passage of material, both comprehension and memory of the passage are hindered. Comprehension evidently increases if the wider context within which information is being presented is known by the reader ahead of time. Closely related to this consistent finding is the work of the frame theorists who argue that in reality knowledge is structured within the mind within a system of frames, e.g., a conceptual framework. Linguistic frames (such as syntactic, semantic and narrative frames) and frames that exist for all stereotyped or cultural situations allow comprehension of reading to take place when the reader places the information he is reading within the proper frame (Minsky, 1977).

Further support for the utility of contextual prediction as a valid mechanism for reading comprehension can be garnered from material relating to meaning and inference (see pp. 95-99 of this text). There, as was mentioned earlier, comprehension almost always involves inferences of one type or another about prose passages. And what is prediction if not a type of inference? Thus, support for Smith's argument for prediction appears in the more remote fields of cognitive science.

Another argument which Smith makes against the emphasis of small bits of information during reading instruction (and by implication therefore arguing for the teaching of contextual prediction) is that students who think they will be responsible for minor facts will likely miss the larger understanding of the material. It is Smith's contention that anxiety causes students to focus on smaller and smaller units which leads to *incomprehension*. A nervous student may, in fact, be so concerned with reading each letter and each word correctly that he will be unable to string together all the other information. In short, focusing on small bits of information may interfere with total comprehension. Some research has shown that reading training should be aimed at developing the capacity to read units larger than letters or words partly because it takes five seconds to move any one item from short-term into long-term memory (Smith, 1971).

Finally, and certainly not least importantly, there is the link between culture and the process of contextual prediction. Thus far, contextual prediction has been described as a process of linguistic or cognitive operation, rather than a cultural one. The importance of familiarity of the reader with the letters, words, and structures (i.e., the language) of a piece of prose and how knowledge is best comprehended when presented in recognizable contexts and frames have been stressed. Both linguistic and cognitive contexts are intimately tied up with a cultural context, however. The most effective application of Smith's contextual prediction thesis in the context of teaching adult illiterates, then, will be from *their* dominant context. Illiterate students should be taught to comprehend and predict within a familiar cultural context.

The reason that culture is as important as language in understanding prose is simply that there is no way to separate the two. Every culture expresses itself, its idiosyncracies, its personality through the medium of a dialect or a language, which means conversely that every language carries culture embedded deeply within it. This is not a re-formulation of the Sapir-Whorf hypothesis. It is rather a statement of the observation that different cultures usually use different languages. Learning to read in a non-native language often means having to grasp cultural beliefs, ideas, and contents which may not be held in one's own native language.

This is to say that the cultural *context* which surrounds an item of prose may often be different from the *cultural* context which the reader brings to it, simply because the author of the text and the reader are from different cultures. This is true of illiterates who do not have English as their first language. But it also appears to be the case with many blacks who read literacy program texts.

Some evidence suggests that cultural knowledge is *more* important than linguistic knowledge for comprehending prose. In an experiment with speakers of English, it was found that statements which were in line with their dominant cultural beliefs were easier to comprehend than statements contrary to their beliefs. This fact held true even when the culturally-right statements were made harder to understand by increasing their syntactic complexity while at the same time the culturally wrong statements were made easier to understand (Gowie and Powers, 1979).

Smith argues that comprehension and meaning come from the individual's ability to predict, which in turn comes from his familiarity with the whole context of the passage. The cultural and life knowledge that the individual already knows, obviously, plays an important role in this process. Students, then, should be taught to utilize any information they currently possess in order to understand what they are reading. A culturally different student can be at a severe disadvantage when trying to comprehend a text, especially if has little or no knowledge of the content. Such knowledge (or lack of knowledge) may not be merely linguistic or cognitive, but frequently may be cultural (Gowie and Powers, 1979).

Another branch of research on comprehension and reading has pursued the interaction between the learner and the text. Ausubel (1963), for example, argued that the structure and organization of the knowledge to be learned was important--that in prose, for example, the way the materials were organized made a difference, indicating that the text can be changed so as to make it more comprehensible, especially by using "advance organizers". Ausubel defines advance organizers as compact statements of new ideas to be covered in succeeding passages, often written at a high level of abstraction or generality. The purpose of advance organizers is to improve comprehension (as measured by retention tests). Ausubel (1968) and Mayer (1968) have posited that retention of material is increased by providing it with a broader context in which it may be assimilated. This context, in turn, encourages the mind to encode or integrate meaningful information. Although research is yet inconclusive, advance organizers apparently

(1) have positive effect when textual information is presented in a difficult and/or illogical form;

(2) are helpful when a body of information is typographically presented in a nonintegrated manner, i.e., if a text is divided into many paragraphs which do not have transition phrases between them; and

(3) (with important implications for literacy research) are helpful with subjects whose "ability is limited with respect to the passage being learned," or even more generally, with "students of lower ability or poorer background knowledge" (Faw and Waller, 1976, pp. 694, 695).

Several other techniques can be used to improve prose comprehensibility. Questions inserted in the text can serve as memory aids. Writing objectives about a passage may also improve comprehension. Lawson (1974) has argued that specific objectives are superior to general objectives. Rehearsal techniques or review techniques may also aid comprehension. The literature, especially on notetaking, however, seems to be contradictory. Some authors argue that the same amount of time simply spent re-reading the material or reading it several times rather than taking notes on it will also improve comprehension. Weiner (1974) presents an hypothesis about how verbalization (another rehearsal technique which might be helpful in literacy programs) provides an auditory-proprioceptive stimulus which serves as an additional or redundant stimulus to the "unidentified neural analogs" of visual stimuli, such as occur in reading. Supporting Weiner is Elgart (1978), who found that third-grade students who read orally did significantly better on the Gates-McGinty Reading Comprehension Test, Form 2, than students who read silently or listened to the material.

Reading comprehension research still has a long way to go, but in the interim it would behoove remediation experts to consider two issues raised by Frank Smith: one concerns how learners might be changed to better comprehend, and the other, which we treat in the following chapter, concerns "*how the school might be changed to make it more comprehensible*" (Smith, 1971, p. 47). First, however, we will consider an area akin to comprehension and reading, and that is what some have dubbed "mathematical literacy".

Problem Solving--The Case for Mathematical Literacy

Since the era of Thorndike and the associationist-behaviorist tradition to today's information processing approach, a major research concern has been how people solve problems. One of the primary reasons for this emphasis has been that no matter how many concepts and skills may be taught, their basic purpose is solving problems (Romberg, 1975). Another reason for this emphasis is the public outcry concerning the alarming failure of United States education to teach the traditional basic skills including reading and arithmetic skills.

Mathematical literacy, like reading comprehension, must move beyond a narrow content orientation focusing on traditional arithmetic skills. The resolution of these deficits, moreover, may not produce students capable of using their mathematical abilities to the extent that they become fully effective members of an increasingly demanding society. The reason is not so much that society in the future will require a greater number of skills than adding, subtracting, multiplying, dividing, and calculating fractions and percentiles. Rather, society, most likely, will need individuals who can employ the skills they possess in *situations where they are needed*. For as Perkins so clearly states:

> Lists of basic arithmetical skills from addition to volumes of solids do an important service in defining minimal competencies. But all hope for their practical use disperses unless students can bring their skills to bear other than when a teacher or textbook invites them to do so (1977, p. 139).

In a survey of 32 participants of the Euclid Conference on Basic Mathematical Skills and Learning, almost every one supported the public call for teaching basic arithmetic. The skill ranking second in teaching priorities, however, was not a content area such as statistics, geometry, algebra, variables, relationships, or algorithms. Rather, the educators felt that certain non-mathematical mental processes such as an ability to estimate, an ability to discover workable processes or approaches to problems, and an ability to discover patterns in data were important.

For example, Buchanan (1975) argued that "skills in rounding and estimation are probably more important abilities than full-blown computation algorithms per se" (p. 34). Davis (1975) and Taylor (1975) phrase the estimation skill as one of "making simple approximations" (p. 205), while Rosenblum (1975), Armstrong (1975), and LeBlanc (1975) specifically list estimation as a necessary inclusion to their collections of preferred skills. Braunfeld (1975) pithily states why estimation is necessary, and in doing so reveals the major objection to some of the current hoopla about the benefits of calculators for mathematics: "The calculator...can be of almost no help at all in judging whether the answer is reasonable" (p. 26).

In the same vein, a large proportion of mathematics scholars are writing that having "the ability to organize or rearrange data intelligently" (Rubinstein, 1975, p. 177) and "exploring data for patterns" (Armstrong, 1975, p. 9) are essential skills on a par with computational skills. Braunfeld (1975) subsumes the interpretation of data "under the general heading of qualitative statistics and rudimentary probability" (p. 26).

And an equally large percent of the theorists in math education write about the necessity of teaching problem solving in modern math curricula. Rising (1975) sees a direct connection between solving problems and accomplishing specific jobs: "Whenever possible, problems should be selected that fulfill both roles" (p. 154). Wirtz (1975), in fact, sees mathematics as "essentially a problem solving endeavor" (p. 218), and Scheffler (1975) agrees. Moreover, Swartz (1975) has designed an entire quantitative approach which "consists not only of knowing how to apply math, but of knowing which math to apply, and to what extent" (p. 197).

Since educators are concerned with teaching estimating, patterning, and solving problems, a logical question is: How much do these processes have in common? We find that, indeed, they are all variant descriptions of a process of discrimination of boundaries, but with different ends. An estimation is a rough measure of where an individual thinks the separation points lie between different lengths, weights, or volumes. Estimation can also be the judgment of the boundary lines between moral or intellectual territories. Ascribing a pattern to data requires more exactness than does estimation, but it is yet a process of perceiving the dividing lines.

Recent models of the process of problem solving do not remove it from its association with estimating and patterning. Resnick's (1976) model has as its first two components the events of (1) problem detection and (2) feature detection. Both are nothing more than a discrimination of the boundaries of an object--either the perception of a problem and its parts of the perception of the features of the background which can help solve the problem.

Each of these three skills (estimating, patterning, and problem solving) has as a central process the function of perception. Active processes of selecting are fundamental to all outwardly passive perceptual acts. When we review the perceptual processes associated with the skills of estimating, patterning, and problem solving, it becomes apparent that the explanations of the skills are somehow incomplete. For a data pattern to be perceived, the data are not just observed but are also compared against some standard (a prototype, perhaps) held in the mind, and then selected as adequate or inadequate. Selection is a process which coexists with every perception--it is judgmental and acts upon the data compiled through perception. In this sense, it is an even higher order process than perception, but it accompanies nearly every kind of perceiving.

Thus, we can state that these three skills--hereafter subsumed under a general heading of "problem solving skills"--involve two separate functions: perceiving and selecting. Perkins labels these problem solving skills the skills of "noticing" and expands his point to show that noticing is in reality "a name /for/ the mind's persistent excursions beyond the boundaries of the perfectly reliable" (p. 146). For Perkins, noticing is the mind's ability to be open to creative uses of old skills. Most important, because noticing is a strategy more fundamental than concrete skills of formal mathematics, it must be cultivated with as much or more commitment than that which has accompanied the 3R's.

For every formula or arithmetical skill that is available in the student's mind, there exists a potentially infinite number of applications. Separate formulas may need to be applied at different stages of problems, just as different skills may be required in different situations. Some problems are found to decompose into simpler subproblems, and some problems are most easily worked out by recognizing their similarity to other, previously-solved problems.

Solving mathematical problems, then, requires not just the application of basic skills, but also strategic ability in wide angle problematic perception and proper skills selection. Much as a general wins wars with his selection and deployment of the proper combat units, so an individual solves problems with the necessary mental skills, perceiving the problem and the skills, and deciding which skills should be applied, when they should be applied, and where. Teaching problem solving may be a higher order cognitive goal than instruction in simple computation or formulas. Many mathematics educators now consider the inculcation of problem solving skills to be "the greatest need in our present day society" (Johnson, 1975, p. 93).

Learning to solve mathematics problems, in fact, may be analogous to learning how to work real world problems: Mathematics education, many researchers feel, has the potential--through emphasizing problem solving education--to be highly relevant in postindustrial society. Both life problems and math problems are situations requiring individuals to attain a specific end through utilization of their own resources, skills, and knowledge theoretically--without outside help. If the math student knows how to carry out a certain algorithm and then can decide under which set of circumstances or in which sequence the rules should be applied, his solution will be generated automatically. Thus, the successful solution is reached as much by the two operations of grasping the whole context and selecting the proper algorithm for it as by carrying out the operations of the algorithm itself.

Instruction in mathematical problem solving, therefore, involves much more than having students memorize formulas or learn basic skills. It also gives them practice in the perception of context and in the heuristics of selection. Contextual perception most likely is connected to the ability of spatial visualization--recognized as an important feature of the mathematical problem solving process. Selection, on the other hand, is a more integrative ability: it is the function of taking the information gained from the holistic perception of the problem plus bringing to bear whatever skills are available and then choosing the proper skill or action which might be applicable. Problem solving, or noticing skills, are, therefore, outside of formal math. The application of these skills may include inventing new skills or altering the ones available (especially if the old ones are not suitable for solving the problems).

Thus, the problem solving components of contextual perception and selection are as necessary to successful mathematics as are the basic skills of arithmetic, the algorithms of algebra and geometry, and the ratios, fractions, and percentages of numbers. Finally, teaching problem solving skills in mathematics will make students mathematically literate. So long as mathematics is viewed as exact, mechanical, and precise--comprised only of computational skills--

> ...it is no wonder that /it is/ isolated from other subjects, since what is here described is not so much a form of thinking as a substitute for thinking..../Thus/ the subject /is isolated from/ other areas of creative thought (Scheffler, 1975, pp. 184-185).

Perhaps certain areas of mathematics should be viewed as mechanical, but recent research is calling even this conservative view into question. Resnick (1976) found that even when algorithmic or rule-applying behavior is taught, learners transform a significant portion of the algorithm into even more efficient routines for solving the problems.

Or put another way, it seems that learning is never entirely rule-based and predictable but rather always involves some creative transformation of the rules by the brain of the learner to fit the situation. Furthermore, Resnick's (1975) study found that this type of rule-changing behavior resulted in more efficient learning, not only in terms of the "fit" of the product to the context of the learner, but also in terms of the learner's ability to remember.

In summary, cognition, as this difficult chapter has illustrated, is an exceedingly complex, multifaceted topic. Cognitive specialists will note that in attempting to build a contextual theory of cognition and literacy development, we have (to borrow Frederick Erickson's phrase), slaughtered valid and fine distinctions on our altar of comprehensiveness. To this we can be consoled by Buckminster Fuller's warning concerning the extinction of specialists and the comprehensive capacity and survival of the Great Pirates.

As cognition relates to literacy development, however, especially when the relationship must include culture and context, the topic takes on an even larger tangle of complexities. When we view that relationship from the lens of a culturally different remediation perspective, it is evident that traditional theorists have failed to provide a completely satisfactory explanation. Despite the lack of unifying theory, however, a valuable set of constituent functions has emerged. Included in that set are cultural influences, cognitive shifts from imaginal, concrete modes to more theoretical ones, socioeconomic conditions, life span changes, cognitive style, comprehension, problem solving, and neurological functioning to make it all happen.

Because of the pragmatic nature of our research, theory has value only to the extent which it contributes to improved instruction. In the following chapter, administrative strategies and program techniques will be described through which the theories described in this and previous chapters may be applied.

Chapter V

A COMMUNITY COLLEGE CONTEXTUAL APPROACH TO LITERACY DEVELOPMENT

> It should come as no surprise that the most popular program to help Chicano students--from the Anglo point of view--was the Remedial Reading program. It is popular with teachers and school administrators because it requires absolutely no preparation, no change in the curriculum, and seeks to adjust the child to the school's expectations.
>
> David F. Gomez
> Somos Chicanos; Strangers in Our Own Land, 1973

> There is still no commitment to working with the disadvantaged student. Even where there are programs, administrators and faculties are the first to plan their demise and these programs amount to a 'pimple' in the total setup of the institution.
>
> William Moore, Jr.
> Against the Odds, 1970

> ...authentic help means that all who are involved help each other mutually, growing together in the common effort /of literacy development/ to understand the reality which they seek to transform...free from the distortion in which the helper dominates the helped.
>
> Paulo Freire
> Pedagogy in Process--The Letters to Guinea-Bissau, 1978

> The Indian-Eskimo Association of Canada..."believes that 'native people should be able to move into the mainstream of Canadian economic, social, and political life with dignity and without loss of identity'"
>
> Royal Bank of Canada Monthly Letter,
> "Canada's Native People," 1966

In the preceding three chapters, the major literacy factors--sociocultural, neurological and cognitive--have been studied in isolation. This is to say, they have been studied in such isolation as is possible; because with both theory and practice there are inherent tendencies towards overlapping and integration, as well as towards disciplinary interests pulling their separate, sometimes independent ways. Now, looking at literacy development as a whole, it is convenient to attempt an integration of the transdisciplinary views as they might be translated into practice through a contextual holistic approach.

As we enter the 1980s, we are just arriving at an appreciation of the situation-specific variable--the variable that seems to hold more promise in dealing with learning difficulties of minority students than any of the variables central to former theoretical foundations (deprivation theory, for example). The most obvious conclusion one might draw from the literature dealing with minority students, in fact, is that we still know very little about them, their situations, how to determine their actual needs, or how to solve the learning problems that they face, particularly regarding literacy. We do know, however, that context is much more important than has ever before been realized.

The literature on literacy development looms large and broad. There is, moreover, as seen in Chapter I, a great debate over the nature and definition of the term literacy itself. Hence, this chapter is delimited to the coverage of models and strategies explicit in the literature as they relate to ideas implicit in the previous chapters. This chapter, then, will incorporate what has been learned from research on the sociocultural, neurological and cognitive variables into a larger framework which addresses a theory and method of literacy acquisition of the culturally different adult student within the community college. To begin, it is important to review research which carries important implications for literacy development and which has been omitted from the previous chapters because of its broader application and to describe real world practice as elucidated by works on organizational climate, counseling and affect, and program techniques found to work with adult students.

Research in Literacy Acquisition

A systematic theoretical framework in which to view the various facets of affect in reading, "the acceptance model," attempts to explain reading on the basis of motivation and attitude toward aspects of reading materials (Mathewson, 1976). The most exciting aspect of this model is that it seems to be relatively free of cultural biases and should be useful with students who have had reading problems in their past educational history.

The Mathewson model consists of five components: attitude, motivation, attention, comprehension and acceptance. The arrangement of these components in the reading process is conceived as hierarchical, each level being dependent upon what has occurred earlier. The reading process is seen as beginning with the activation of two components: the motivational process and relevant attitude toward reading. The motivational process is whatever motivation impels a person to read. (Note that the motivation is open-ended and, therefore, has the potential to be unbiased.) Relevant attitudes toward reading are based on the value of the responses to various aspects of reading input whatever they might be.

The model suggests that unless positive and favorable attitudes and motivation toward reading are established, the next level of affect in reading will not be activated. Should both positive motivation and positive attitude toward reading occur, the next two levels of the model may be activated. One is the attentional; the other is the comprehension process. The attentional process involves self-direction and orientation regarding the reading materials. Comprehension is the cognitive process necessary to extract meaning from print.

Once reading is occurring in the directed manner, and meaning is being derived, the fifth component, acceptance, may be activated. Acceptance involves the interaction of prior values, attitudes and beliefs with the meaning derived from the reading material. Acceptance or rejection follows, and this influences the attitude toward further reading.

A model such as this is much more relevant to literacy development programs for culturally different adult students than models of reading which take into account only mechanical processes.

As Mitzel (1966) pointed out over a decade ago,

> The primary difference between teaching adults to read and teaching children to read is *the immediacy of the adult need. Children learn to read and then they read to learn.* They may require 3 to 4 years to learn to read, and during that time their needs are taken care of; decisions are made for them; and the ego suffers no great mortification from the fact that they cannot as yet function on their own (Mitzel, 1966, p. 67, our italics).

At the adult level, however, the *need* is the catalyst. In a doctoral dissertation (New Mexico State University, 1972), Murray found that Mexican American and Negro groups did not feel that their colleges were meeting their needs or serving their aspirations. And 71 percent of the Mexican American and Negro participants had a *clear idea* of their cultural needs and educational aspirations. Finally, Murray, in a rather general conclusion, suggested that family, cultural and community values influence educational aspirations.

Taking a similar stance, Ramirez and Castañeda (1974) believe that one of the main reasons Mexican Americans experience school difficulties is "because their culture is not given recognition in the classroom and because school personnel are not aware of differences between traditional Mexican American and mainstream American middle class cultures" (p. 56). It is their belief that mainstream values cluster around (1) a sense of separate identity, and (2) individual competitive achievement (*Ibid.*), while Mexican American culture is composed of four major value clusters: (1) identification with family, community and ethnic group, (2) personalization of interpersonal relationships, (3) status and role definition in family and community, and (4) Mexican Catholic ideology (*Ibid.*).

In attempting to understand the reasons why these individuals have not learned to read, it may be relevant to ask first: Has adequate reading motivation been established? What are the attitudes of the individual toward reading? As Mead (1971) has observed, this basic attitude toward reading matter probably determines who becomes literate and who does not. For this reason, it seems particularly pertinent to evaluate students, conditions, and the reading method employed in their instruction in terms of a model such as that proposed by Mathewson.

Since student attitudes toward learning are of paramount importance in any educational program, it may be useful to apply techniques successful in other areas to the educational context. Branch (1976) lists several techniques designed to elicit and measure beliefs, attitudes, and "intents to act" on the part of recipients of population education programs. Although population limitation is the principal goal of the programs which Branch discussed, her suggestions may be useful in the context of adult literacy programs as well. Before designing curriculum for adults, Branch claims that it is necessary to deduce the set of "core beliefs" held by participants regarding themselves and the material being taught. The techniques recommended are scenarios, role play, games and simulation. She suggests that using Freire-type photograph-created scenarios (Freire, Education for Critical Consciousness, 1973) might be very useful for preliterate programs and "from the evidence of the emotional involvement of persons participating in Freire-type conversations, this mode might well elicit a much richer emotional context than written scenarios" (p. 251). In addition, this process would lend itself well to group participation.

The situational difference interpretation of cognition and culture (Cole and Bruner, 1973) was discussed in Chapter IV. Cole and Bruner believe that there are two basic implications for using the situational difference approach with culturally different students:

(1) The Pygmalion effect is real. Thus, they suggest that if teacher attitudes were to change, "recalcitrant" students would likely show fine performance.

(2) The teacher should concentrate on how to get the child to transfer skills he already possesses to the task at hand, rather than laboring under the impression that the teacher's objective is to create new intellectual structures.

In the context of the situational difference approach to teaching culturally different students, Cole and Bruner (1973) believe that relevant study materials are essential. Relevant materials, for these authors, are not merely materials that "motivate" students, but they are those to which the child in his own context already applies skills the teacher seeks to have applied. Labov has synthesized three major points which weaken the argument of the deprivationists:

(1) an assertion of the functional equality of all languages;

(2) an assertion of the psychologists' ignorance of language in general and of nonstandard dialects in particular; and

(3) the inadequacy of present experimentation.

Through his own experience Labov has been able to conclude that in the usual testing situations, particularly in I.Q. and reading test situations, defensive behavior by the child who has realistic expectations is a natural outcome because he knows that to talk openly is to expose himself to "insult and harm" (reported in Cole and Bruner, p. 456).

Stauffer (1977) found that *the amount of time* spent in formal reading instruction was more influential in improving reading proficiency than were the particular types of teaching techniques used. Sticht (1975) also emphasized the lack of success for students involved in short-term reading programs. Guthrie found that increased time influenced gains in achievement, but that socioeconomic class did not relate to achievement. It seems, then, that increased instructional time influenced achievement across social classes. It is interesting that he found increased instructional time not to improve achievement among normal readers, only among those with reading deficiencies.

Relevance is likewise an important variable. Hutchison (1973), (also Roueche and Kirk, 1973; Roueche and Roueche, 1977; Roueche and Snow, 1977; Johnson, 1976) underscored the improvement possible in reading proficiency when students are allowed to read what they want to read--i.e., when the material has relevancy and interest to the student. Hutchison also suggests that when a student is working with materials selected to meet his interests, his attendance will improve.

Harman (1974) observes that "...literacy is the basic communication skill that enables the individual to extend the range of his contact well beyond his immediate environment" (p. 82). He deals primarily with the problem of *motivation*. He writes: "Unless adults are motivated to attend classes, they will not become program participants, and once enrolled in programs unless they are motivated..." they will not continue (p. 47). Quoting another researcher, Houle, who divides adult motivation into three categories, Harman lists:

(1) extrinsic factors--attendance is seen as a means to attaining another objective;

(2) social factors--attendance is seen as a means of socialization;

(3) intrinsic factors--literacy is pursued for its own sake (Houle, 1961)

Harman suggests that program designers take into consideration the factors influencing initial and subsequent motivation, designing programs accordingly.

In an invaluable paper presenting concrete methods which can be used in adult literacy programs to enhance motivation and to sustain it, Lauren Resnick and Betty Robinson (1975) emphasized the value of a *contextual* approach, one which builds motivation not just with learners but also with teachers and institutions. They recognize that if any one of the three basic components is weak (learners, teachers and institution) the energy of the system will leak away, just as energy in a car battery will drain away if any one of its components is weak. Challenging the conception that children of a "disadvantaged" class are not adequately motivated to achieve, they argue that part of the blame should be shifted to the institution. Institutions must work on the "four factors which account for the individual's perseverance and learning": (1) aspiration, (2) expectation, (3) external rewards, and (4) intrinsic reinforcement. In aspiration the adult must have anonymity since he is usually ashamed of his illiteracy. There must be a parity of relationship between instructor and student. That is, the teacher's authority must derive from the student's recognition of his competence as a teacher of something the student wants to learn. Other models must be visible. That is, other individuals who are engaged in the process of literacy development can serve as role models. And, finally, the programs must capitalize on the sense of mutual responsibility for another's education. Many semiliterates may aspire to be literate in order to tutor their own children.

The second factor which accounts for an individual's motivation is expectation. According to Resnick and Robinson, expectation is manifested in three areas: task setting, evaluation, and attention. The third factor they single out is external rewards. Something besides the initial desire is necessary to maintain the learning process as the student learns skills which may not be intrinsically rewarding. Resnick and Robinson suggest token economies, contingency contracts, and systematic social reinforcement--praise and contingent attention that reward whatever is regarded as proper learning behavior. They feel praise may be the best of the three reward systems for adult literacy programs, as it uses the social reinforcement of peers and families. And, finally, the two most powerful intrinsic reinforcers are success and pleasure. Resnick and Robinson claim that success is good because it builds self-image.

Because Resnick and Robinson recognize the necessity of developing a culture and content of successful learning experiences for students, they apply these same factors of motivation to teachers and institutions. Teachers must set high goals (aspiration), teachers must also have models of success (expectation), there must be supervisory recognition, peer recognition, and good records of student progress (external reinforcement) and there must be cooperative staff meetings which are positive (internal reinforcement). In summing up their educational programs: (1) programs should be designed so that most individuals are successful at most tasks; (2) there should be clear standards of success against which individuals can measure their own performance; and (3) individuals must feel they have met the standards through their own efforts.

Harman (1976) criticizes the quality of curricula in general use with illiterate adults in developing countries. He claims that in designing programs for such learners, the designer should acknowledge that: curricula first should be "situation-specific"--that is, programs must "be tailor-made for target groups rather than produced in a vacuum and then forced upon learners" (p. 177). Presently, when the learner is made to fit the curriculum and the result is unsatisfactory, the onus is often placed upon the learner rather than the curriculum. Harman stresses that the salient characteristic of successful adult-oriented curricula is this "situation specificity" (p. 177). The second requirement of such curricula is that programs be functional and have immediate relevance for the students. He contends that many literacy programs have been unsuccessful because they regard literacy itself as an end; literacy skills were considered to be "functional tools that, once mastered /could/ be put to an inordinate number of practical uses" (p. 178).

By the early 1960s, UNESCO observed that most programs treating literacy as an end were failures. Successful programs stipulated areas in which literacy could play a functional role. These were "...modification of economic and social structures, economic diversification, industrialization, rural development and the achievement of higher productivity" (Harman, 1976, p. 178).

This acknowledgment is useful in that it abandons the idea of literacy as an end in favor of the idea that literacy is a means to an end. However, the concept is still faulty in that it is based on the premise that "the functionality of literacy skills is a universally perceived notion" (p. 178). "Such is not the case. In fact, among illiterate peoples, literacy itself has little or no value" (p. 178). Men will only learn to read when they perceive that the ability to read has value for them personally.

Freire identified the myth of the universal functionality of literacy: "It so happens that to every understanding, sooner or later, an action corresponds. Once man perceives a challenge, understands it, and recognizes the possibilities of response, he acts. The nature of that action corresponds to the nature of his understanding. Critical understanding leads to critical action, magic understanding to magic response" (Freire, 1973, p. 44, as quoted in Harman). Thus, the first step in literacy education, according to Harman, is to develop a basic concept that characterizes literacy skills by type and function, for these ideas will not exist in illiterate cultures. First, a "literacy consciousness" must be developed.

In the area of reading, Ruddell (1976) notes that most early reading materials require "code-switching" for the learner (i.e., the reading materials are written in English yet in a style and form that is unlike that which is spoken). Also, phonological and morphological development are not the same for individuals learning standard and those learning nonstandard varieties of English (this fact is significant with regard to the learning of word-sound relationships). Baratz (1970) demonstrates the structural qualities of Black English that make a valid and functional language for its context. She suggests that initial reading skills be developed by using Black English texts and then introducing transition to Standard English literacy.

Beyond the morphological development, however, several authors have suggested there may be stages or strands one goes through in order to reach fluent literacy. Fries (cited in Harman, 1974, p. 27), for example, divides the development of literacy into three stages:

1. Transfer stage--during this stage "the process of learning to read in one's native language is a process of transfer from the aduitory signs for language signals (which have already been learned) to the new visual signs for the same signals."

> 2. Productive stage--"the response to the visual symbols becomes unconscious."
>
> 3. Imaginative stage--"the deciferment of the written symbols becomes as automatic as speaking a language" and reading "is used equally with or even more than live language in the acquiring and development of experience" (Ibid., p. 27).

These stages are similar to the learning strands of auding and automatization that Sticht discusses (1975). Sticht has been concerned with opening a dialogue about the literacy "reading" problem of "simply not being able to language by eye as well as...by ear" (Sticht, 1975, p. 13). He asserts that Jenkins and Liberman (1972, p. 1) have stated the problem concisely: "At all events the 'reading problem' as we know it would not exist if, in dealing with languages, all children could do as well by eye as they do by ear."

Through the model Sticht has developed and through his subsequent experiments, he has concluded that "there are at least two major, interdependent learning 'strands' ":

> 1. One is learning to language by eye as well as one can by ear; this is what is meant by learning to read. Further, I have presnted evidence to suggest that this aspect of learning may involve two 'stages': the learning of the knowledge and skills required to decode printed words into language, and the subsequent practice of this skill until automaticity is acquired.
>
> 2. The second major strand overlaps with the first and refers to learning the new vocabulary and concepts found in the printed materials one uses in learning to read, and includes the learning of new skills for processing information from printed displays based on the unique properties of such displays; their permanence and spatiality (Sticht, 1975, p. 30-A).

Sticht's model contains inherent sensory-perceptual-motor mechanisms for the developing of language through receptive (listening and looking) and productive (uttering and marking) processes which lead to literacy: "the representation of thoughts via the use of conventionalized signs (words) and rules for sequencing these signs (syntax) in speaking and auding (listening to speech in order to learn language)" (p. 7). His model assumes the cultural context to be a literate society (Ibid.). He posits, "that the development of the oracy skills requires the development of the cognitive content (i.e., knowledge which is the "primary 'tool skill' for acquiring further knowledge--whether by oracy or by literacy skills) through intellectual activity which we call conceptualizing ability" (Ibid.). He asserts that literacy is based on a developmental sequence: "the literacy skills are built upon existing oracy skills as the end of a developmental sequence...when the literacy skills are initially acquired, they are essentially to be construed as a second way of utilizing the same language system the child uses in speaking and auding" (Ibid.).

The hypothesis Sticht derives from this model is that "a child's ability to comprehend language by auding will surpass his ability to comprehend language by reading during the early years of school until the reading skills are acquired, at which time ability to comprehend language by auding and by reading should become equal" (p. 8). A corollary to this is that the child develops full *automatization* in decoding at this time (p. 12).

In his experiments, Sticht has found discrepancies in auding and reading skills of adults in literacy training programs in Northern California. Ranging in age from 17 to 32 years and in school grade completed from seventh to sixteenth(!), Sticht's subjects, many of whom spoke English as a second language, exhibited interesting combinations of auding, reading and "reading potential" scores. Those whose primary language was English scored on the average at the fifth grade level in *auding*; but the ESL group scored at the third grade level. Yet the ESL students were reading *above* their reading potential level. Sticht explains this phenomenon by suggesting that it is easier to read a foreign language than it is to comprehend it in spoken form (p. 15). Sticht interpreted his data to mean that "many of the EPL (English as the Primary Language) students operate at such a low level of competence in the oral language that even if they learned to language by eye as well as by ear, they would still perform at 5-6 grade levels below the average high school senior; hence, the reading 'problem' in this case must be more broadly conceived to include a larger language problem." He includes another explanation of this difficulty:

> ...much of the acquisition of literacy is not simply learning to read, i.e., learning a substitute language system for the oral language system. Rather, a large part of learning to be literate, and perhaps the most important part for acquiring higher levels of literacy, is learning how to perform the many tasks made possible by the unique characteristics of printed displays, their permanence and spatiality (p. 25).

Thus, the second learning strand that Sticht conceives as a major factor in literacy acquisition and one that is a "particularly unique aspect of reading, as distinct from auding," is learning to use the printed medium for literacy task performance and understanding various graphic displays using iconic, linguistic, and schematic representations. Since the printed word can be arrayed spatially, figures, graphs, charts, and so on require "the use of a particular mode of representing thoughts" (p. 25).

Thus, Sticht concludes that learning to language by eye as well as by ear "takes longer than we thought" and has important implications for program planning:

> Strong attention needs to be given to providing *extensive* reading training for adults, so that automaticity of reading skills can be fully developed, and so that the advanced information processing skills involved in processing various graphic displays can be developed (p. 30-B).

In other words, as was suggested earlier, short-term literacy programs may be quite ineffective.

Under the auspices of the Naval Education and Training Command, Biersner (1976) conducted research to locate information about tests and measures which would be useful in identifying Navy personnel who might be required to take part in remedial reading programs and to determine the characteristics of those students who were most successful, including laterality findings.

Like Sticht, Biersner was dealing with a heterogeneous population of adults. The subjects were administered a battery of tests which included verbal and nonverbal measures. A variety of intelligence, aptitude, demographic, perceptual, and laterality data were collected. Independent measures included nonverbal intelligence and perception tests, demographic measures, and laterality tests: handedness, eyedness and other scores. The two major criteria were the group (control or remedial experimental) to which the recruit belonged and the reading achievement scores attained by the members of the experimental group. Biersner found verbal tests (the General Classification Test, the Mechanical Test, and the Arithmetic Test) correlated highly with the group (remedial/non-remedial) criterion. The Raven Progressive Matrices which was associated significantly with the group criteria was also highly related to these other verbal measures. The Clerical test, however, was found to have only a low order correlation with these other verbal tests, the Clerical test scores being correlated significantly with the group criterion. Other nonverbal measures, including education, race, modification of hand use and consistency of hand and eye use, were also shown to differentiate significantly between the two groups. Biersner believes that these results show that conventional tests of verbal intelligence, especially the GCT, perceptual measures such as the RPM, and cultural or socioeconomic factors such as race, are useful in differentiating between poor and better readers:

> Determination of whether a recruit should be in the remedial or non-remedial group was easier, however, than determining reading comprehension achievement among members of the remedial reading group. Race and handedness were found to be the most useful measures in determining reading achievement among members of the remedial reading group. The findings for handedness may be an indication of the facility with which word processing is accomplished by poor readers at the peripheral (sensory) and central (brain) levels, while the results for race may indicate that while non-Caucasian recruits were more likely than Caucasian recruits to require reading remediation, non-Caucasians perform better in the remedial reading program than Caucasian recruits. Non-Caucasian recruits may, therefore, have reading problems that are related to cultural factors such as inappropriate vocabulary development, while Caucasian recruits may have more basic and difficult reading problems such as poor word attack skills or impaired visual scanning patterns. If this interpreta-

> tion is correct, then current remedial reading programs should be restructured to correct for these entrance level differences (pp. 2-3, our italics).

While this discussion is not the place to detail the numerous multiple correlations Biersner made, it is important to stress his findings that the possibility exists that the degree of cultural assimilation, or as he puts it, "poor social adjustment," may be a significant factor in reading/literacy deficiencies of his subjects: "Poor social adjustment may deprive these recruits of the verbal (spoken and written) interactions that may be necessary for normal reading development" (p. 24); the relationship between "cultural-developmental factors and reading performance should be explored more extensively, /and/ present reading remediation programs should be prepared to adapt training to these cultural-developmental differences" (p. 27); more valid laterality measures must be found (p. 28). Finally, Biersner recommends that special attention be provided to the reading problems of minorities who "appear to have a much higher incidence of reading impairment than Caucasian recruits and the types of reading problems found among minority groups may differ from the types of reading problems present among Caucasians" (p. 31).

Moos and Moos (1978) report the results of a study directed to determine the relationship between classroom environment, student grades and absences from the class. The assumption underlying the research was that classroom environment significantly affect student performance and behavior. The hypotheses tested were: (1) absenteeism was positively related to competition and teacher control and negatively related to involvement, affiliation, and teacher support; (2) average class grades were positively related to involvement, affiliation, and teacher support and negatively related to competition and teacher control. The results of the study supported these hypotheses.

No causal implications may be drawn from Moos and Moos' data due to the complex nature of the phenomena. The study did not control for other important aspects of the classroom environment such as neurosociological or sociolinguistic variables. The authors do, however, suggest some practical implications for the high-risk classroom. "It is possible to assess a social environment, provide feedback to participants about the characteristics of the milieu, to engage and motivate them to change the social milieu and directions they themselves desire, and to monitor and evaluate the results of the change process" (p. 268). Counseling, therefore, should be considered a necessary component even beyond the individual student level (see the following section on affect). One possibly productive area of guidance counseling may well be oriented toward the classroom and the social relations involved in the classroom situation.

The International Institute for Adult Literacy Methods has organized meetings of experts to develop and begin a series of training monographs, "Literacy in Development," to be translated into many foreign languages, and to cover a wide range of subjects, functions, and techniques (Literacy in Development: The Second Step, Final Report of Second Experts Meeting, 1976, p. 3, ED 127772). Sample titles are: "The Use of Radio in Adult Literacy Education," "Understanding Visual Literacy and Communication," "Literacy Linked with Family Life," and "Simulations and Games in Teaching Literacy."

One of the most useful publications sponsored by the IIALM thus far, however, has been *Paulo Freire, Literacy Through Conscientization* (1974), a collection of articles about or by Freire, his methodology, key words, samples of pictorial situations, and research methods. Freire conceives of literacy "not as a set of technical skills to be transferred to a learner, but as an act of liberation intended to provoke a new sense of self and a creative and constructive orientation toward the external realities that surround and threaten to submerge us." In fact, from this point of view, the person with the greatest store of sheer "knowledge" is not basically different from an illiterate. As Iran's former Minister of Science and Higher Education and member of the United Nations' University Council, Majid Rahnema, has put it: "Paulo Freire's foremost contribution to literacy has been to show the irrelevance of a formal, aimless, 'content-less' approach to the subject" (p. v). Freire does not see *conscientaçao* preceding learning to read and write, or vice versa. Rather, *literacy and* conscientaçao are simultaneous.

Freire's (1970) method of teaching illiterate adults involves, as alluded to in Chapter I, a process of two-way exchanges, a dialogue. He suggests the teacher must strive to overcome the students' alienation by encouraging them to be aware of their personal situation as an *object*, an oppressed recipient of cultural invasion by mainstream educational institutions. Freire says that "liberating education consists in *acts of cognition, not transferals of information*" (p. 67, our italics). The Freirean perspective can best be explained in his own words: "To exist, humanly, is to *name* the world, to change it...the world appears as a problem and requires a new naming. Men are not built in silence, but in word, in work, in action-reflection" (Freire, 1970, p. 76) /and/ "/A/ group without an expressed general theme has the theme of silence" (1970, p. 97).

Freire suggests that a teacher begin literacy development by convincing those who cannot read that their condition is only a limit-situation, for a teacher who understands the culture of the students represents a "thematic universe" to these individuals as a problem that serves as an issue for dialogue. A teacher uses pictures, has students explain situations that they are observing, and interacts with the students about the solutions to the situation.

Freire indicates that a revolutionary program of literacy should be organized via: (1) cooperation subject-to-subject (teacher-student); (2) blend of cognitive, affective, and action-taking aspects; (3) organization of the program with a cultural understanding of the students and the community; (4) activities of cultural synthesis with students being made aware of the ownership of their own behaviors (labor, study, goals).

In Freire's most recent publication, *Pedagogy in Process; the Letters to Guinea-Bissau*, he describes how a West African coastal country has collaborated with him in literacy development. Besides stressing the popular participation of "culture circles" wherein peasants hold theoretical dialogues about their existential reality--beginning with concrete local issues (such as reconstructing a street), Freire introduces his concepts of coding and generative words and advocates literacy education of adults as "one dimension of cultural action for liberation." From reading words, Freire believes an individual can move to the deeper "reading" of one's own reality.

His mode of collaborating in a literacy campaign reflects his fundamental belief in humility and equality: "authentic help means that all who are involved help each other mutually, growing together in the common effort to understand the reality which they seek to transform... free from the distortion in which the helper dominates the helped" (p. 8). Clearly political, the literacy/post-literacy campaign is conducted through the "mutual help" of Freire, the Institute for Cultural Action (IDAC), and the Department of Education of the World Council of Churches in Geneva, on the one hand, and adult educators in the Commission of Education, PAIGC (The African Party for the Independence of Guinea and the Cape Verde Islands), and FARP (the Armed Forces of the People) in Bissau, on the other.

While some may not agree with Freire's political motives, he gets phenomenal results. UNESCO efforts to stamp out world-wide illiteracy have failed dismally (Hechinger, 1975), yet many third world nations using Freire's pedagogy have achieved remarkable increases in adult literacy (Kozol, 1978; Ashton-Warner, 1963). His simple notion of raising political awareness may have complex implications for adult cognitive research. Perhaps George Eliot was right when she remarked, "No man can be wise on an empty stomach."

As we can see by the ways that these theoreticians, especially Sticht, Biersner and Freire, view literacy and its acquisition, some closure still needs to be made. Sticht does not consider the environment or cultural factor, but microscopically views the student's characteristics of auding and automatization. While Biersner sees a relationship of laterality to literacy development and cultural factors, he still hasn't viewed cognitive development as Luria did, nor Freire, nor for that matter as Sticht did, though he is closer to Sticht's concept of auding in his notions of knowledge of vocabulary. Sticht conceived of "basic adaptive processes" and cognitive development components, both of which one can construe to be neurologically based, but he does not make either explicit. His conception of auding might be tied into Luria's graphic-functional concept in some very constructive ways. Luria indeed may have been implicitly testing auding! Unfortunately, we can never know at what auding grade levels Luria's peasants might have been functioning.

What is needed is a sift of these investigations leading to an agenda for future research and practice, that we might finally pinpoint the contextual relationships between and among the variables of culture and consciousness, sociohistorical roots and literacy, neurological mechanisms and modes of thought. A review of the literature concerned with practice suggesting optimal means for fostering central skills will surely enlarge our vision and increase our understanding of literacy development. The following section focuses on the means that various practitioners (including top administrators, counselors, and teachers) have found to be effective in implementing literacy development.

Practice in Adult Literacy Development

Discouraging results have emerged from industrial, military, and collegial programs designed to upgrade unskilled workers (Roueche and Snow, 1976; Sticht, 1975; Rowan and Northrup, 1977). Such programs have promised much more than they have delivered (Cook, 1977, p. 343). Retention remains a constant problem (Roueche, 1978; Roueche, 1979; Hudgens, 1979); those who do complete seldom get the expected promotions--a phenomenon which may play a key role in the subsidiary problem of motivation. Research into organizational climate, counseling and affect, and programs and techniques may place these discouraging results in a new light, thus enabling us to improve minority performance in academic achievement.

Organizational Climate

Hall (1975) recognized the importance of many variables in a system, and one important variable was "organizational climate". Roueche and Mink (1976), in their own studies of instructional processes in Texas community colleges for five years, came to similar conclusions about organizational climate. In effect, they noted that

> ...the school 'climate'...was supportive of student learning and success.
>
> ...these more progressive and innovative colleges were attempting to be more involved with the student as a whole person and were, in fact, doing everything in their power to facilitate student success in control of his/her own learning processes (pp. VII, 1-2).

In another study by Appel, Roueche and Mink (1977), findings support that overall differences in climate, press, or college environment appeared to make dramatic difference in student success. In fact, "the institutional environment seems to have an overwhelming effect on the behavior of community college students" (p. 64). Thus, it appears that institutional, faculty member, and student features combine to provide an environment for good instruction. It is apparent that organizational "climate" appears time and again in the minds of investigators of community college efforts.

Forehand and Gilmer (1964) synthesized a variety of definitions of organizational climate to arrive at:

> Organizational climate refers to the set of characteristics that describe an organization that: (a) distinguish the organization from other organizations, (b) are relatively enduring over time, and (c) influence the behavior of people in the organization (p. 362).

It is our assumption that organizations having the characteristics of positive growth and positive outcomes would be those organizations that are well about themselves. For example, one might consider Piaget's views about all organisms. Piaget comments that organisms have in common two invariate functions: organization and adaptation (assimilation and accommodation) (Ginsburg and Opper, 1969). These functions are considered behavior tendencies, as opposed to mere reflexes to a set of circumstances. In effect, all organisms would have the tendency to systematize their processes into understandable wholes. That is, they seek to combine all of their components into an orderly, higher-order structure--a tendency to "organize" (Ibid.).

Secondly, there is Piaget's functional adaptation; adaptation itself is the combination of two processes--assimilation and accommodation. The process of adaptation is merely a survival tendency. Within adaptation, assimilation is the process whereby the organism deals with its endowment in terms of present structures and organization; on the other hand, accommodation is the organism's tendency to change the structure or organization in response to environmental demand (Ibid.).

Community colleges, in order to deal with their variety of students, must be about processes of change as they carry out the functions of organization and adaptation. If they are only about assimilation, they will arouse insignificant amounts of interest. Moreover, they will offer few experiences that differ from the students' own familiar, past experiences. The more interesting facet of community colleges would be that they are about change (Snow, 1978).

In effect, an oragnization with an advanced organizational climate will allow itself to recreate or evolve into a higher-order structure. It will have a greater capacity for adaptation, for growth, and can relate in meaningful ways to its immediate environment and make adjustments that allow it to meet environmental needs (Aulepp, 1977; Banning, 1974, 1978; Conyne, 1978). There are specific characteristics of that type of organization: it will be involved in an ongoing way with its environment; it will bring about changes in itself to meet environmental demands; it will accommodate new technologies that appear to provide better service in meeting environmental demands. With specific regard to the NIE Project, it is supposed that these changes in meeting environmental demands will mean organizational attempts to meet individual differences in instruction; in other words, the organization will be instruction-specific to all students, and specifically, to the culturally different.

In a recent study employing a survey instrument of "organization functions", the thrust was to discover the "what" of organizational climate. The survey was a result of an awareness of the perpetual diversities in and among community college environments. In fact, Snow--the researcher--admitted...that "(P)erhaps the only constant in community college teaching is the diversity of student interests, ability and background" (p. 25).

Mink (1977) notes that rigid community college structures will discourage or prevent these colleges from meeting student needs, that this rigidity leads community colleges to resist change. Such systems are referred to as "closed". Mink notes that the closed system is not conducive to accommodating diverse students and that

> ...in the community college, the college-parallel programs fall in this category. These can thrive under

> bureaucratic management because by nature they demand much constancy and little change. This is not true of adults in continuing education, occupational/vocational/technical programs, developmental studies programs, and many student service components (p. 89).

Climate, as viewed in Snow's study, is "an assessment of the central process structures by which an organization adapts to its environment, i.e., the organized schematas by which system inputs and interactions are either assimilated, accommodated or ignored" (p. 26). The literature review provided concern areas for a study of organizational climate. A concern for innovation directed our study to Fredericksen et al. (1972). This study concluded

> ...that in an innovative climate...greater productivity can be expected of people with skills and attitudes that are associated with independence of throught and action and the ability to be productive in free, unstructured situations (p. 13).

(In the NIE Project, the assumption is that degree of innovation can be measured in institutions by observing instructional strategies--their relevancy, their "newness" /sensitivity to innovative strategies/, their ability to accommodate diverse learning styles/needs.)

Litwin and Stringer (1968) noted that organizations with "achievement climates" were far more productive and innovative than were organizations that were characterized by "power" or "affiliation" climates. Their study lent support to the Fredericksen et al. (1972) study in regard to the directional nature of organizational climate. That is, members of the organization react best to an explicit, consistent statement of organizational purpose. In effect, when individuals have a clear idea as to the direction in which the institution feels they ought to be moving, they respond in a much more consistent manner.

Lawler, Hall and Oldham (1974) studied relationships between organizational structure, process and climate, and organizational performance and job satisfaction. They conceived of climate as being the intervening variable between structure and process, on the one hand, and performance and satisfaction, on the other. They found a dearth of relationships between structural and process variables and measures of organizational performance. The most significant finding was a study which linked collaboration and innovation; in effect, they found a significant tendency for those institutions that encouraged collaboration (climate) among researchers to be more innovative (performance) and more highly evaluated on technical and administrative performance. These authors concluded that perceptions of organizational process were more strongly related to behavioral and attitudinal outcomes than were objective characteristics such as span of control, organizational size or formalization. More importantly for our own project, this study pointed to the importance of collaboration between and within hierarchical levels--important because this collaboration is related to innovative, technical performance.

Many studies noted in the literature review supported the Fredericksen et al. (1972) findings. Namely, restrictive rules that are provided in production areas that most normally require creativity and interaction serve as repressive influences. Moreover, hazy and/or contradictory processes and outcome requirements within an organization appear to produce a detrimental effect on both morale and production. Schneider (1974) notes that some climates appear to facilitate individual differences and increase group performance. In effect, he noted that environments which allowed individuals to be most creative and unique while at the same time belonging within the larger system afford a greater congruency between individual needs or goals and organizational needs and goals. In effect, an institution that believes in/encourages/promotes individuality and rewards it, will have more of its own needs and goals met.

One way in which institutions demonstrate care and concern for individuals whose learning rate and strategies do not, by nature, proceed at an "average" rate, or a rate typically prescribed by the educational institution, is individualized instruction. Individualized instruction is one approach that instructors at an educational institution might undertake to provide for differences in learning behaviors. Actually, individualized instruction has been referred to as a "method" (Herrscher, 1973), an "approach" (Roueche, 1972; Cross, 1976), a "means" (Bellmore and Sellers, 1977) and a "term" (Burns, 1971). As a term, Burns described individualized instruction as:

> ...nothing more than applying logic to the learning act, and then, by careful planning and organization, providing an efficient method whereby learners have the opportunity to acquire behavior in their own way at their own rate (p. 56).

As a means, Bellmore and Sellers (1977) have described individualized instruction as:

> Individualized instruction is quite often proposed as a means to break away from the traditional group-oriented, lecture-dominated instruction (p. 13).

Roueche and Pitman (1972) said of individualized instructional programs and the underlying systematic principles upon which the self-instructional units are based:

> The teacher begins by determining his objectives. He screens his objectives against a philosophical base, the general goals of his subject field, and the needs of individual students. Once he has made these decisions, he determines behavioral goals. He pre-tests the students....Then he designs the learning experiences for each instructional sequence....The final step in the systems approach is evaluation (pp. 92-93).

Herrscher (1973) described an operational methodology for individualizing instruction:

> The six components of this system (rationale, objectives, preassessment, learning activities, post-assessment and revision) form a rational framework that accommodates all modes of instruction (p. 20).

Cross (1976) reviewed PSI, CAI, IDI, and Programmed Instruction and Audio-Tutorial Systems. They each call for behavioral objectives, sequence learning from simple to complex, and a demonstration of observable behavior change to indicate that learning, indeed, has taken place. She concludes her comments about instructional systems:

> The individualization of learning lies at the heart of the instructional revolution. The movement is young, but it is accelerating rapidly now, so that almost every college in the country has been affected in some way by the phenomenon of self-paced learning (p. 74).

Because community colleges are so committed to providing education for everyone, as Cross (1976) has indicated, they most nearly have failed to provide education for each individual. She notes that individualized instruction has as its primary focus and intent the reaffirmation of learning and of concern for individual learners.

Roueche and Snow (1977) noted that there are institutional environmental variables which make a difference to student performance and development. They noted: Pace (1969) found that students with strong attachments to the college were typically in colleges demonstrating a high sense of community and awareness; Astin and Panos (1969) discovered that students more likely completed degrees if their college was characterized by a peer environment which encouraged close friendships among all students. Generally, these authors discovered that student achievement and aspiration are dramatically improved when the collegiate atmosphere emphasizes relationships and personal development dimensions (also see Thistlethwaite, 1960; Rock, Centra, and Linn, 1970; Centra and Rock, 1971; Gerst and Sweetwood, 1973).

It is encouraging that many colleges hav elected to encourage student assessment of the college environment whereby the college might reduce undesirable influences and augment desirable ones. Concern for improving the college environment will lead colleges to ask students, staff, and administrators--not to mention the community itself--to be watchdogs of their services (Roueche and Snow, 1977).

Institutions providing support services for literacy development --support services provided by administrators, counselors, instructors-- have the best opportunities for increased student learning and success (Roueche and Snow, 1977). The instructor, the key to the learning experience, has often been a subject for investigation by developmental educators and researchers alike. The support services--specifically financial support and support services to literacy development programs-- provided by the institution serve only to enhance a culturally democratic learning environment and to provide support for these aforementioned key personnel.

Ramirez and Castaneda (1974)--in discussing the educational components of a culturally democratic learning environment with reference to language, heritage, and values--suggest that the ideal bicultural identity can be enhanced when the educational program incorporates a respect for cultural differences which includes different languages and heritages and an identification with both the mainstream culture and the Hispanic culture. Enhanced self esteem, improved academic achievement and intercultural understanding are among the goals that they believe can be achieved using such a model of bicultural education. In addition, they suggest that the development of "mental flexibility" can result from a wider, more sensitive, and bicultural experience in the educational setting. They list three components for a field-sensitive learning environment:

(1) The classroom is arranged for small group instruction: small tables, rugs and learning centers are available. This environment permits the teacher to work closely with students.

(2) Classroom environment lends itself to group projects. It is possible for the entire class or group to work together toward common goals.

(3) Rooms are personalized. They reflect the ethnic and social backgrounds and interests of the students. Their classwork and personal contributions decorate the walls and other areas (p. 143).

While these recommendations are obviously made for the elementary classroom, certainly extrapolations within the context of the community college are suggested (i.e., small group instruction, group projects, common goals, cooperativeness, and the provision of ethnic art within the formal educational setting as well as in extracurricular activities).

Many other researchers have corroborated Ramirez and Castaneda's findings. Ligon and Holley (1978), for example, published an article concerning the efficacy of field trip experience in the bilingual education context. Course content would be more viable, they believed, if it dealt with an experience familiar to students. Results of their own research indicate that experience-related education is a valid approach to bilingual education. They recommend that special teacher training should be mandated--training in bilingual education; such training would include Spanish reading comprehension, second language instruction, use of bilingual aides, knowledge of Mexican-American culture, familiarity with the philosophy of bilingual education, and the use of normative and criterion tests.

Findings such as those of Ramirez and Castaneda (1974), Ligon and Holley (1978) and many others suggest implications for methodological improvements which might be made in the teaching of minority students in the community college context. Certainly there are clear directions set forth for furthering our understanding of the internalized process of learning and how individuals and groups may differ from each other in this respect.

It is important to note that institutions with successful developmental studies programs (literacy programs) are those institutions keenly aware of the importance of the instructor and his role in the institution. The teacher's selection is, by and large, a reflection of an awareness that the teacher must be someone who volunteers to teach in this area, who has a keen sense of student literacy needs, who reflects an awareness and acceptance of instructional strategies to accommodate individual learning differences, and who has high regard for those students who undertake such large steps toward improving their personal/educational/economic conditions.

In effect, as O'Banion (1971) has noted, the personality of successful developmental instructors has resembled that of the

> ...kind of person who has been described by Abraham Maslow as self-actualizing, by Karen Horney as self-realizing, by Gayle Privette as transcendent functioning, and by Carl Rogers as fully functioning. Other humanistic psychologists have described such healthy personalities as open to experience, democratic, accepting, understanding, caring, supporting, approving, loving, nonjudgmental. They tolerate ambiguity; their decisions come from within rather than without; they are not afraid to encounter others or themselves. They believe that man is basically good, and given the right conditions, will move in positive directions (p. 485).

Most developmental teachers in community colleges and universities today have been trained not only in their own content fields but in instructional strategies (Roueche and Snow, 1977; Roueche and Roueche, 1977). Successful teachers of literacy efforts have become very familiar with motivational and attitudinal problems experienced by the culturally different/nontraditional students, and they have been involved in supportive programs provided by their institutions to increase their awareness and their ability to deal with these problems. Although many of these teachers have not been trained in specific counseling techniques, many of these instructors are involved in counseling _per se_ and seek out the help of trained counselors--counselors either in _their_ own departments or available to the student body at large--or other qualified persons.

A present trend in observations of successful literacy development programs is that teacher and counselor competencies/behaviors are under investigation (Roueche and Roueche, 1977). Presently, the trend is that teacher and counselor characteristics are becoming more interdependent. Often, counselors are found teaching developmental courses, and instructors are moving into more counseling roles. Understandably, institutions that seek to provide the very best service to the learner as an individual and to the learner as a student/learner begin to merge good teaching with good counseling and attempt to meet both the academic and personal needs of the students. Once again, the clarity with which goals and objectives are expressed within the institution affects the role-relationships of all in the institutional setting.

As for the counselor's specific role, there must not be limitations upon available counseling services. In effect, the counselor should not be restricted to filling out financial aid forms, meeting registration schedules, investigating transfer requirements; rather, the counselor should reflect a supportive role that does much to undergird the teaching-learning process. In fact, it has been found that most successful literacy programs have a counseling component built into them that provides additional strength to the overall literacy effort (Roueche and Kirk, 1973; Roueche and Snow, 1977; Roueche and Roueche, 1977).

Another undergirding structure to a strong literacy program is one in which peer counselor/tutors are involved in the overall program. Merely recruiting students to work in a peer tutoring/counseling process does little to enhance the educational outcomes of developmental students; however, successful programs demonstrate an awareness up front of observable criteria for their peer counselor/tutors and seek out individuals who meet this criteria. Overall results have been dramatic, and the trend is to allow more peer counseling/peer tutoring to occur and to provide these services to the student body at large. Research reports are that counseling training *per se* was the least related peer counseling training variable to successful implementation of literacy programs (Roueche and Snow, 1977). To the contrary, the most closely-related peer counseling training variable was that of self-concept development techniques and awareness training situations. In effect, the initial demand for peer counselors--trained and employed as a result of manpower needs in dealing with the high risk student--has evolved into a major integral part of a good counseling/teaching program.

In a recent national survey of community colleges, four-year colleges and universities, critical elements were isolated within successful programs designed to remediate/develop basic literacy skills. The following factors were those that respondents agreed were related to their own successful programs. Those items followed by an asterisk displayed a "statistically significant relationship to student completion of a degree or a certificate program; however, each of these items *is* supported by...data as a factor associated with high student retention and program completion" (Roueche and Snow):

(1) A special program for the educationally disadvantaged has been developed.

(2) Written course objectives are distributed to students.*

(3) Tutors are trained in techniques which develop positive self-concepts in their tutees.*

(4) Day care centers are utilized as laboratory schools for child development students.

(5) Special instruction or training programs are provided to assist faculty members to work more effectively with academically-deficient students.

(6) Developmental students are compared favorably with other students of the college by developmental faculty* (p. 78).

In the same survey, certain criteria emerged as conducive to programmatic success:

(1) Distributing a statement of their developmental philosophy to new students

(2) Improving students' self-concept*

(3) Utilizing part-time professionals in their learning centers

(4) Training peer counselors in self-concept development techniques*

(5) Developing test items from prestated instructional objectives

(6) Evaluating student success on the basis of follow-up records, attitude, and self-concept development

Additional criteria appeared to be means by which senior colleges assessed the success of their basic programs:

(1) Offering diagnostic assessment or testing services

(2) Establishing a division of developmental or basic studies*

(3) Establishing learning assistance centers

(4) Providing peer tutors to work in learning assistance centers

(5) Providing counselors who assist students and staff in learning assistance centers

(6) Training peer counselors in techniques of counseling

(7) Providing day care centers

(8) Pretesting students and providing the necessary learning materials

(9) Hiring developmental instructors who volunteer for their assignments

(10) Training instructors in instructional techniques

(11) Providing an ongoing evaluation system

(12) Retaining students in college until the second and third semester* (Roueche and Snow, p. 77-111).

Implicit in these criteria is the top priority of enhancing the intracultural skills of the teacher. Immediate staff development efforts should be directed toward teacher training and a recognition that teachers (as well as students) experience cultural problems. Recent reviews of classroom performance in multicultural settings have pointed to the inability of teachers to cope with "culture" as a concept (Rosen, 1977; Harrington, 1978). Some have even gone so far as to suggest that education (teaching) does not involve curriculum but culture: success is defined by sociocultural attitudes and interaction (Salamone, 1976).

While resource works dealing with minority behavior and its cultural contexts (Gomez et al., 1976), instructional materials for teachers to help them perceive the nature of culture (Saville-Troike, 1978; Gibson, 1976; Abrahams and Troike, 1972) and contributions to teaching method based on recent research in communications, psycholinguistics, and anthropology (Castaneda et al., 1974) are now available, most are concerned with students younger than college age. Efforts, including materials and workshops, must be supported which contribute to a better understanding of the adult student and to increasing the capacity of community college teachers to work constructively within a multicultural situation.

The philosophy and rationale that a college or university supports in regard to a basic studies program is a key factor in its success or failure. Those colleges/universities that acknowledge the importance of the "Pygmalion effect"--or the effect of expectations on performance--go a long way toward planning for success. Uncovering a college's philosophy is best achieved by looking at the many components that form a bird's-eye view of the experience an institution provides to a student: rationale statements for program offerings, policies for admission, statements of philosophy, instructional strategy, practices for diagnosis and placement, administrator/instructor's student perceptions, and so on.

Institutions which are determined that students will succeed decide early on about the kind and level of academic skills that are essential to life and the kind and level of academic/personal/economic skills that are necessary for students' "making it" in this advanced industrial society. Merely the provision of these kinds of programs and courses will not guarantee success, but institutions that profess and build these programs on solid philosophical bases will surely have more success than those having no program at all. A recent national study noticed that in examining statements of philosophy, institutions paying close "...attention to development of the total student, including his skills, feelings and ambitions" (Roueche and Snow, 1977) were success-bound. These programs place heavy emphasis upon the responsibility of both the educators and the students for student success.

Although it is a highly-charged question, researchers (Roueche and Snow, 1977; Roueche and Kirk, 1977) note that courses in literacy development should be mandatory--if diagnosis/evaluation deems them to be so! To allow a student to make unwise choices--given that these choices are a student's "rights"--is to promote failure, a failure which could be avoided. But in mandating developmental courses, it is a must that institutions constantly evaluate the needs and provide programs that do not track students or merely segregate culturally different students into an educational track that is of low quality and bad design. These institutions should carefully develop/implement programs that encourage student learning and do indeed provide successful experiences for students in order that they serve both the present student and the future student who will attend because of the encouraging outcomes which have been spread far and wide about the program.

Counseling and Affect

The unique educational problems deriving from the special needs of minority students are only beginning to be understood. What we do know is that their problems are social, cultural, political, and economic in nature and these problems manifest themselves both inside and outside the classroom. Unfortunately, traditional learning theory (discussed in Chapter IV) fails to address the complexity of minority student learning. The most notable contribution that conventional learning theory has produced, in fact, is the cultural deprivation theory, and its "own sad work" (Bernstein, 1971) has been discussed previously. Cole and Bruner aptly stated the insidiousness which accompanies this theory:

> Cultural deprivation represents a special case of cultural difference that arises when an individual is faced with demands to perform in a manner inconsistent with his past/cultural/experience....The great power of the middle class has rendered differences into deficits because middle class behavior is the yardstick of success (Cole and Bruner, 1971, p. 452).

Prior to the late 1960s, many of the culturally derived learning problems of minority students were perceived as forms of mental retardation. Learning problems of blacks and browns were likened to disease. These "mentally handicapped" students--typically labeled emotionally disturbed, learning disabled, or educably mentally retarded--had little opportunity to learn as long as the educational establishment ignored contextual differences. Once the educational establishment took the significant step, however, of considering the possibility that the learning problems of minority students might have environmental origins and that test scores might be reflective of culture biases rather than a lack or deprivation of intelligence, finally some progress began to be made. Poorly trained teachers, irrelevant curriculum, and a lack of understanding of the interface of cultural differences were just some of the variables which had been ignored using traditional learning theory.

The dominant theme of articles in the late '60s concerned with minority students and their education emphasized that these individuals had different cultural backgrounds and faced linguistic problems and majority bias in the classroom (Carr and McGuire, 1969; Guerra *et al.*, 1969). The new wave of culture-sensitive authors argued that the minority student deserved recognition on his own terms and that he might need special attention if he were to succeed in higher education. The primary message suggested that *counseling* the minority student would require as much latitude and sensitivity as teaching (Rodriguez, 1969).

By the 1970s, more specific recommendations were being made. For example, in a paper presented to the annual meeting of the American Personnel and Guidance Association, Ballestros (1970) maintained that there was a lack of sensitivity on the part of educators regarding learning and behavior patterns of Mexican Americans. He called for "more sympathetic counseling." Among his suggestions were these: (1) that counselors be required to have some academic preparation in bilingual/bicultural studies; (2) that the availability of ethnic studies be increased; (3) that in counseling situations Spanish-speaking Americans and other minority students should be informed of diverse job opportunities--not just vocational--that is, they should be informed about a variety of academic programs; (4) that communication between the educational institution and the community should be increased.

Frederick Erickson (1973, 1975) has looked at the gatekeeping function of the counselor in interaction with students of diverse ethnic backgrounds. Erickson believes that the counselor's judgment of who the student is impacts the outcomes (particularly special help given the student) of counseling encounters. Decisions made by counselors in these encounters include deciding the social identity of the participant (race, socioeconomic status), communication style, nonverbal behavior, commonality/solidarity worked out between the participants (co-membership) through behavioral smoothness or nonsmoothness (uncomfortable moments), and emotional tone. Although Erickson found ethnicity to be an extremely important variable in counseling encounters, it was not all-encompassing. He found situations where deference often made a difference in special help outcomes. Also if co-membership could be established, the ethnicity variable was not always the major contribution to counseling outcomes. Nevertheless, Erickson's research again reinforces what we already know about minority counselors having greater success with minority students.

Snow (1977) recommended that peer counselors and peer tutors can play a significant role in student success. And while Snow strongly endorsed the concept of locus of control developed by Julian B. Rotter (9154), another researcher (Lipton, 1977) found that certain attribution of responsibility reactions may correlate with an "externalized" locus of control among Mexican Americans. Muñoz (1977) examined a population of Mexican American students to see whether there could be found any demographic, SES or attitudinal characteristics which would account for a seeking or nonseeking attitude toward counseling service. He found no differences between the two groups. He did, however, find that the nonseeker favored the use of Spanish in the home by a two to one majority (Ibid., p. 88). This preference for Spanish is one component of a measure of traditionalism. Although no other traditionalism measures are reported, this one lends some support to the negative relationship between Mexican American culture and seeking of counseling. Both seekers and nonseekers heavily favored the idea that counselors be more professional and more informed. This may suggest a traditional Spanish orientation toward authority. The Mexican American students resisted being counseled by paraprofessionals and students.

Lin et al., (1978) found that Anglo and Indian ethnic groups had different patterns of help seeking in counseling situations. Chinese, for example, resisted seeking counseling. Cultural forces then, seem to cause ethnic groups to utilize different styles or patterns of seeking help from mental health professionals. Ethnicity, then, may well affect whether a student chooses counseling as a source of help with his problem. Counseling can reflect a cultural style and thus can either attract or repel a cultural group owing not to its psychological value but to its cultural form. Style and form of counseling offices in community colleges must reflect an awareness of such cultural projection. Not only does ethnicity affect the choice of counseling but also it affects the success of the counseling process. Mexican American students for example, might be more comfortable (and hence more communicative) with older, professional-appearing counselors than with younger, more casual persons.

Some time ago, Wallace (1956) conceived of a stress model which may be useful for counselors. Information about the world and how the individual perceives and organizes that information is a sorting process in a "mazeway". The functions of this cognitive map or mazeway are: (1) to give meaning to messages; (2) to maintain internal consistency of values with reality of the outer world; and (3) to correspond with reality--to change values that do not "work" in the person's life. Reordering our mazeways may help us reduce stress, especially when "the disillusioned member of society realizes that the sociocultural system no longer...operates according to the principles which his mazeway assigned it." Wallace calls this a mazeway resynthesis. It is possible that a culturally different student may receive conflicting information from his family and his school situation, thereby blocking learning as the individual juggles strategies for survival and meaning. Many people in culture conflict or in poverty suffer mental stress. Withdrawal from the source of stress--the community college, for example--can promote greater consistency in a person's life. Therefore, counseling personnel who are aware of cultural conflicts and the attendant stress experienced by minority students can seek ways to blend elements of both subcultural and mainstream worlds to reduce student ambivalence and alienation in order to facilitate full attention for learning basic skills.

In every instance of a successful literacy program, efforts to improve self-concept--at least to recognize the importance of self-concept development and to foster a positive feeling about oneself--are apparent (Roueche and Snow, 1977; Roueche and Roueche, 1977; Roueche and Mink, 1976; Roueche and Kirk, 1973). The decision to foster self-concept development appears in an institution's staffing, programming, instructional decisions.

Successful programs, in their concern for the total student, are assessing whether incoming students have needs for literacy development by including batteries of tests that measure not only reading, writing and mathematical skills but perceptions of self and ability for making it at the college level. The following tests are frequently mentioned as fulfilling the criteria of reliability and validity in measuring these important areas of concern: Stanford Achievement Test, Nelson-Denny Reading Test, Comparative Guidance Placement Test, Nowicke-Strickland Locus Control Scale, Tennessee Self-Concept Test, Stielberger Anxiety Scale, and many other locally-designed tests to accommodate specific institutional offerings.

Undoubtedly, colleges and universities are caught up in a large challenge, a challenge that asks questions about their abilities to help students in need, to understand and successfully help students whose learning problems appear to be working out of a self-fulfilling prophecy. As Carkhuff and Berenson (1967) concluded:

> After nearly one-half century of monumental effort, educators, psychologists and statisticians have been able to account for approximately one-fourth of the movement in their indexes of academic achievement. To be sure, over the past decade their prediction curves have flattened out; that is, no matter how many or what variables these researchers add to their equation predicting academic achievement, they do not increase their predictability (p. 133).

In effect, much humility must accompany any efforts that an educational institution undertakes to provide help to students who need basic skill development. Since some institutions report high success rates while others report lower ones, it might be effectively noted that some institutions "should be described as...high- or low-risk environ/s/" (Roueche and Snow, p. 81).

From an organizational point of view the literature dealing with culturally sensitive learning environments, affect, motivation, and organizational climate has definite application for policies and procedures relating to literacy development. To be more creative about counseling and to develop more innovative developmental studies programs, the body of literature suggests that it is just as important to counsel teachers as it is to counsel students and it is just as important to have peer counselors as well as professional counselors.

And finally, it is important that teachers learn counseling strategies and that counselors can also tutor in the academic teaching sense. We need to be able to help counselors to understand the kinds of problems that they are seeing in the classrooms and elsewhere and to be able to come up with more sophisticated kinds of explanations than merely the old self-concept kind of explanation.

We must avoid "dominating the helped" à la Freire. We must reject the damaging-culture view and theories of deprivation. When an individual has a poor self-concept in the classroom or a non-standard dialect, it does not necessarily mean that the individual needs to improve his self-image and/or drop his accent. It may mean that an environment of cultural pluralism, of mutual help, needs to be created, an environment which fosters positive self images for all involved. An effective way to reach the largest number of students is not in merely counseling them, but in approaching the whole environment as one that needs attention: students and teachers alike, administrators, registrars, all involved in creating a less than optimal social environment (Conyne, 1975; Huebner, in press; Banning, 1978).

Surely the worst one can do is to go in and say to teachers. "Well, no wonder these students are failing--you treat them like failures, you create a bad self-image." More appropriately, one should say that a problem is evident and it is making everyone's work more tedious and less joyful and ask how this experience can become more productive and enjoyable. Approached in that way, eclectic pluralism, integrated literacy, and a more positive impact on everyone concerned can result.

If teachers have but a superficial idea of what culture is, then, of course, the cross-cultural interaction can be quite negative. It is a strong suggestion that new staff development efforts in the area of culturally democratic learning environments include cultural training. In effect, every individual is unique, has his/her own unique strengths and weaknesses, ways of doing things; the teacher's responsibility is to help each individual develop his own particular capacities, his own particular goals and aspirations. To accomplish these aims, acknowledgement, acceptance, and recognition of individual and cultural differences are essential if we are serious about enabling all persons to achieve holistic literacy--to go beyond survival and to live more fully and more meaningfully.

Strong motivation--in its purest form with regard to learning--is an individual achieving the realization that learning has something to offer him in his life and that at any time he wants he can decide to act, to seek learning, and to make it a part of himself. Achieving this kind of motivation in the classroom will promote broad successes that are independent of ethnic or class correlations. Radford and Burton (1974) aptly state the situation:

> ...patterns of social interaction and communication in a typical school are so intricate that we are not justified in assuming that all children automatically receive the same type of stimulation and instruction simply because they share the same teachers and curriculum (p. 162).

Programs and Techniques

Information on literacy programs, teaching techniques, and materials used in adult literacy instruction exists in numerous scattered sources, many of which are brought together here for the first time. Besides building self-esteem (Sherman, 1976), the instructional goals must have value to the student (Hutchinson, 1973, 1977) and be shared by student and teacher. Curriculum for adults must be "situation-specific" and tailor-made for adults (Harman, 1976). Another theme which has emerged from the literature on literacy programs is that of efficiency. Adults have no time to waste on long, drawn-out programs which use outdated and irrelevant materials and techniques. If adult students perceive programs to be a waste of time, money, or energy, they will lose interest and drop out.

In an outstanding volume, entitled *Handbook for Teachers of Reading in Adult Basic Education*, Friedman, Knight *et al*. (1970) emphasize that from the onset of an instructional program, teachers should realize that adult learners have abilities and needs particular to their group. Adult students are not children and should not be taught as if they were. Indeed, several characteristics must be kept in mind when teaching adults:

> (1) The adult is here in school because he wants to be here.
> (2) He brings with him many experiences from his daily living....

(3) Although the adults that attend the reading classes are intrinsically motivated, they can become discouraged easily if they do not experience immediate understanding and success.
(4) The adult must be made to feel able, that he has the ability--and he has.
(5) Adult students are mature.
(6) Adults are more easily distracted by physical disabilities (poor sight, hearing and physical discomforts)....
(7) Adults are social beings, and friendships, as well as academic interests, keep them working (Friedman et al., 1970, p. 6).

Certain guidelines to enable the instructor to optimize the learning experience for adult students are suggested:

(1) Do not spend time telling what you are going to do.
(2) Provide students with background for what they are learning.
(3) Never underestimate the skills or knowledge of the student group.
(4) Have a course outline of what you expect to cover each session, but be prepared, and willing, to abandon your outline temporarily or revise it as the occasion may demand.
(5) Plan for participation all the way through the course (Friedman et al., 1970, p. 45).

Certain needs unique to adults, when not met, appear to affect attendance. Friedman et al. (1970) believe that adults need to read well enough to help their children with their schoolwork. Adults need to read for their job; fulfillment of this need is especially important for obtaining a better job, more pay at their present job, or more respect in the workplace. Adults need to read for their own personal adequacy (i.e., to read a pattern and so sew better; to be able to shop more wisely). Adults need to read so that they can pick up a letter or magazine and be able to read it.

To build positive affect and self-confidence, Friedman et al. suggest the following:

(1) Be optimistic. Remember that learning takes time. Be patient. Encourage the adult to be patient.
(2) Review. Don't test but review. Say, 'Let's remember together.'
(3) Provide an informal atmosphere where people feel free to ask questions and to interact, not only with the teacher but also with each other.
(4) Encourage working groups--class members stay if their friends stay. And if they have friends in class, they will stay (p. 8).

The development of a basic sight vocabulary in order "...to raise the student to a stage of proficiency which allows him to recognize words quickly and accurately" is a common goal of many literacy experts (Friedman et al., 1970). Some practical activities for achieving the sight vocabulary goal include (Friedman et al., 1970, p. 14):

--Helping adults keep a personal list of those words they express a wish to know;

--The introduction of five or six words for the day drawn from current events;

--Placing words that are going to be used each day on a chalk board;

--The writing of a cooperative class newspaper on newsprint;

--The availability of word or phrase cards based on basic sight vocabulary, including the use of commercial words;

--The opportunity to study picture-word cards individually or with a partner; and

--The use of the cloze technique (the insertion of a missing word in a sentence).

Friedman and Knight recommend conferences and small group discussion to further enhance the learning to read process. Conferences help students with vocabulary and help the teacher find out where the students' interests lie and what they are reading. During a conference, the teacher can help students with those word skills that will take care of their immediate needs, especially by having them make a notebook for all the new words that are meaningful to them.

Students may be grouped according to interests (subject matter, occupation, hobbies, goals), according to ability, or according to practical needs (passing the driver's test, caring for clothes, planning meals, reading bus schedules, using the dictionary) (Ibid., p. 47).

When conducting group activities, Friedman and Knight believe that several group dynamics tips are useful:

(1) Promote an informal atmosphere by arranging the seats in a circle rather than in a row.
(2) Encourage the members to introduce themselves and give some background information about themselves.
(3) Set down the objectives and goals for the class in order to provide them with direction.
(4) Give your students an opportunity to be involved in the decision-making processes of the class.
(5) Reinforce their efforts positively.
(6) Let your students feel free to move in and out of the group (Ibid., p. 47).

These principles, of course, are designed partly for positive affect. In organizing curricula for adults, one of the key considerations must be the affective domain, as reviewed in earlier discussions of counseling (Hinz and Lotano, reported in Hernandez, 1978). The fragile self-image the adult often exhibits in class may inhibit learning, since fear of embarrassment may block class participation.

Cárdenas and Cárdenas (n.d.) add an additional observation regarding affect that should be considered in programs design for ethnically different students. Research indicates that Mexican A-merican students perform better in cooperative rather than competitive activity. Thus, programs should capitalize on noncompetitive activities. Teachers of Navajo children at the Brownsville conference, Bilingual and English as a Second Language Approaches to Academic and Vocational Programs for Adults, in February 1979, reinforced this perspective (B. Harold Roberts, personal communication). That is, there seems to be a cultural trait among Navajos which discourages competition and encourages cooperation.

Spalding (1978) recommends that a literacy program have:

(1) a cultural awareness component;

(2) a follow-up procedure to carefully study students whose reading does not improve after the program;

(3) an early-on matching of learning disability specialists with students scoring the lowest on pretests.

Krashen (1975) writes that a literacy program should employ both deductive and inductive techniques (deductive = rule-based; inductive = inference-based). His criteria for selecting which technique to use in given situations include:

(1) the idea being taught;

(2) the learner's cognitive style;

(3) the effect of time (deductive approaches may produce more lasting results for some students) (p. 441).

Specific instructional techniques mentioned in the literature are diverse. With the exception of the debate between teaching units smaller than words (Wickelgren, 1979, p. 148) and the global/analytic/synthetic approaches outlined by the Smiths (1962), the techniques are usually congruent. Sherman (1976), for example, gives techniques for instruction in reading an assigned article. These include:

(1) giving students specific techniques for organizing chapter material;

(2) having students orally recite important facts of the chapter;

(3) giving specific instruction in methods of test-taking.

When peer group discussion is an accepted mode of learning within a particular culture, the lecture method appears to be a poor substitute for informal discussion (Harman, 1976). Peer instruction is useful in other ways as well. Using a "jigsaw technique", Norma Spalding (1978) engages the class as a whole first in a presentation--perhaps an organization of essays. After examining models, the class divides into jigsaw groups with each group being given a paragraph to write dealing with a particular topic. The class later reunites to work out corrections and transition.

For vocabulary building the groups are given cards based on a reading. The groups discuss the words, and then students teach them to each other. Records are kept of the number of words identified by each group. Some authors (Gray, 1963; Freire, 1973) suggest that words first be presented as wholes, then divided into their parts and new words formed from the letters of the original word. Wickelgren (1979), however, promotes the "feature system" of units smaller than words.

Muriel Prieto (1973) found that Spanish-speaking ESL students in an experimental group who were administered semiprogrammed lessons illustrating at least one prefix or word root common to Spanish and English, showed significantly greater progress in word identification, general vocabulary, and reading comprehension than students in a control group. Such results seem to support previously mentioned authors who recommended word attack techniques for literacy training.

Other researchers note important teaching strategies and program results. Louise Hayden (1978) reports that, in an experimental program involving junior high school students, multisensory approaches used in ESL instruction improved reading skills in both native and non-native English speaking students. She stresses the relation of motor development to language competency and the importance of intonation contours to reading comprehension. Her strategies included using peer tutoring techniques and instructional materials rewritten in a dialogue form based on the pattern of second language instruction. Lessons were taped so that students could read as they listened to the intonation contours.

The program consisted of four steps:

(1) Students were paired.

(2) Listening--without papers, students listened to a recording of the dialogue.

(3) Listening-Reading--recorded lines were followed by a pause during which the student read the line aloud.

(4) Listening-Reading-Writing--partner number one read the line again and dictated it to partner number two. Then number one read the paper, checking for spelling and punctuation errors.

To prevent students (who consistently perform poorly) from developing negative attitudes toward instruction, Branch (1976) recommends "no loser" games. Based on previous comments made by Cardenas and Cardenas and the Navajo instructors, perhaps these games should involve team rather than individual competition.

A UNESCO report on the experimental World Literacy Program (1976) emphasizes the need for adult content and activities. Adult group activity may remove the possible stigma attached to literacy education based on models developed for children. The report cites peer teaching and out-of-class activity as particularly helpful to adult learners.

Positive affect can be achieved by building on the thought patterns and skills that semiliterate and illiterate students bring with them to class. Materials introduced at the beginning of the program could include soup labels, advertising logos and symbols such as the ampersand and the dollar sign (Greenfield, 1968; Goodman, 1968). Students can acknowledge that they already have some literacy skills the first day of class. Extrinsic motivators (access to a goal, such as helping children with homework; tokens; and candy) have been useful in encouraging adolescent students to read (Staats, 1965). As skills increase, Staats predicts that reading will become its own reinforcement and extrinsic motivators can be removed. It may be difficult to find extrinsic motivators which are attractive to adults who are attending classes voluntarily (Staats' subject was an adolescent). The idea may have value, however, for prison populations.

Hernandez (1978) lists preliminary steps to develop student interest in materials:

(1) study of pictures or objects related to the reading;

(2) discussion of title;

(3) discussion of subject matter in an attempt to relate it to students' personal experiences.

In addition, Hernandez describes other learning techniques found to be successful with adult students in literacy and ESL programs. One method, "motivated silent reading" (p. 11), for example, consists of three steps:

(1) give students a purpose for reading;

(2) ask the main questions before reading;

(3) give faster readers additional assignments to keep them occupied while the other students finish.

Hoskisson (1975) says that sentences should be used as the main units of meaning rather than parts of sentences. Williamson (1978), however, uses the opposite approach. For example,

(1) students reading technical/scientific material should syllabify words and verify meanings in the dictionary;

(2) use of glossaries and dictionaries is encouraged to recognize units of meaning within words;

(3) use of a concept dictionary (Laffal's A Concept Dictionary of English, 1973) is also recommended to help recognize word roots.

Eventually concurring with Hoskisson, Williamson does conclude that students should be taught to outline and to recognize basic concepts in texts.

Sticht (1975) and Klare (1974) discuss the "cloze" technique developed by Taylor (1953). Considered an efficient exercise for reading instruction, the procedure "...involves removing every fifth word in a passage and replacing it with a standard-size blank. The reader is asked to fill in each blank, with only the deleted words (except for minor misspellings) accepted as correct answers" (Klare, p. 66).

Finally, a simple approach for outlining chapters or teaching word derivation is used by Coyne (1979). Students draw a tree with the name of the chapter on the trunk. They put as many branches on the trunk as there are chapter sections and leaves on the branches to indicate important topics. After this exercise students are given a ditto with the name of the chapter at the trunk and are to fill in the rest from memory. This procedure is useful in bilingual as well as monolingual classes.

The stated purpose of Hartnett's disappointingly brief thesis, "The Relation of Cognitive Style and Hemisphere Preference to Deductive and Inductive Second Language Learning," was to "determine cognitive styles of individuals by means of an eye movement test classifying them as either left or right hemisphere dominant learners, and then to assess their improvement and achievement in a deductive or inductive second language class" (p. 2).

The assumptions underlying this investigation included:

(1) Right dominant learners will be more successful in classes employing inductive instructional techniques; and

(2) Left dominant learners will be more successful with deductively presented materials.

These suppositions were supported by Cohen (1969) who maintained that "'analytic' learners do better on tests that require deductive reasoning, while 'relational' thinkers seem to rely more on inductive processes" (p. 8).* Although we may question results based solely on the gaze shift technique, his conclusion that successful teaching stimulates both hemispheres of the brain has value. Hartnett suggests that imagery be used in language classes, that the audiolingual approach not only will enhance listening and speaking, but also create interest in reading and writing, and that language be taught through pictures. He further suggests that "realia" and magazines be used to tie the verbal concepts being taught to visual images. He believes that both deductive and inductive approaches should be offered in all schools as alternative teaching strategies, and that students should be allowed to choose their style of instruction.

A report by Maryjane Cable (1978) contains several sections of practical use to instructors of adult semiliterates:

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*"analytic" and "relational" not defined

I. An informal interview (p. 27) to be conducted with the student upon entry into the reading program

II. Procedures for inventory of skills and student placement (p. 56)

III. A student evaluation form to be completed upon termination (p. 71)

IV. Procedures for simplifying reading materials to accommodate students of different abilities (p. 40)

V. Various teaching techniques which are described in detail.

Using the Johnson and Kress (1965) informal reading inventory, the instructor gives the student three consecutive samples of connected print--any printed material except a word list. The student is then asked to read the first sample orally and to answer questions (note: whether oral or written is not specified) on the material. During the reading the examiner lists errors. The student reads the second sample silently and again answers questions. A third sample is read aloud by the examiner while the student listens. Questions are asked following this presentation also (p. 56).

Levels of student reading skills are described in the following terms:

(1) Independent level--student has no difficulty in reading material without instruction.

(2) Instruction level--student can read material with some help.

(3) Frustration level--student has such difficulty with the material it cannot be understood.

The inventory would, of course, be administered at the beginning of instruction, since its purpose is to match students with materials which will most likely ensure their success in processing printed information. Information dealing with skill inventory and student placement, simplification of materials, and instructional techniques is most useful.

At the beginning level of instruction, materials may have to be simplified to accommodate students with limited reading skills. The process consists of five steps:

(1) Compute readability level of material using, for example, the Fry formula (or other readability formula).

(2) "Determine the minimum essentials of the passage...necessary for understanding the basic idea." Sentences conveying this idea are often at the beginning and the end of paragraphs.

(3) Substitute short synonyms for longer words when possible.

(4) Rewrite the passage including only that information necessary to convey the main idea.

(5) Apply the readability formula used earlier to the rewritten version (p. 40).

The report contains detailed descriptions of teaching techniques stressing the development of cognitive skills, as well as recommendations for building positive affect through "success oriented" (p. 51) experiences.

The Fernald method of remediating reading disabilities is described in detail. Students learn words of their own choosing, regardless of length, and these words are taught to them through the process described below. After learning several words, the student begins to write a story in which he uses them. As the story grows and new words become necessary, they are first learned and are then included. The story is typed for the student within 24 hours so that he may read what he has written as soon as possible. Since positive affect is generated by students as they see their stories and word files grow, this seems to be an excellent idea. The student is actually composing his own primer using a technique similar to that recommended by Harman.

Words are taught in a four-stage process:

(1) Tracing--The instructor first writes the word and the student traces it with finger contact while pronouncing the syllables. Tracing continues until the student can trace without looking at the copy. The word is included in the student's story and filed on a card in a word file.

(2) Writing without tracing--The student at this stage learns a new word by seeing it written and writing it without looking at the copy. He also says it aloud. (Multisensory approach)

(3) Writing from text--Students learn words from a text by seeing them, saying them, and writing them. The teacher may help with pronunciation.

(4) Reading words by recognizing similarities to known words--After the stage involving learning from the text, students begin to acquire new words from their similarity to words already known. The student is told words when he asks. He writes these from memory and then continues.

A multisensory technique is also included for teaching individual words.

I. The visual approach includes four steps.
   1. Word is presented on a card or on the blackboard.
   2. Teacher pronounces word.
   3. Student looks at word and pronounces it.
   4. Student may be asked to select the new word, choosing it from a group of words, or to employ the word in a sentence.

II. The auditory approach is described in seven steps.

1. The word is presented in writing.
2. The first letter or letter group is presented in isolation.
3. The teacher pronounces the initial sound or sounds.
4. Student pronounces the exposed portion of the word.
5. As syllables are pronounced correctly, additional syllables are added.
6. When the entire word has been correctly pronounced, the meaning is immediately determined, and if necessary, discussed.
7. The learning is reinforced by having the student read the word again.

III. Kinesthetic emphasis includes six steps:

1. The word is presented in writing.
2. The teacher writes and pronounces the word again.
3. The student writes and pronounces the word.
4. The teacher's and student's copies are compared.
5. The student pronounces the word while writing it from memory. This step is repeated until the word is written correctly.
6. Learning is reinforced by writing the word in stories or sentences.

IV. Tactual (sic) emphasis (Tracing) comprises five stages:

1. Word is presented in writing.
2. Teacher traces the word with fingers while it is pronounced.
3. Student traces and pronounces the word.
4. Student continues to trace the word until he can write it from memory.
5. Learning is reinforced by tracing or writing the word in sentences or stories.

V. The "neurological impress method" (NIM) (1974) also involves a multisensory approach, and the authors recommend it to be used in a one-on-one situation.

The teacher and student meet in consecutive sessions of fifteen minutes for a total time of eight to twelve hours. Dramatic improvement in reading performance is expected around the eighth hour.

The student sits slightly in front of the teacher so that the teacher's voice is easily audible close to the student's ear. During the first session, they read the same material out loud together. At the beginning of the program the teacher reads slightly ahead of the student and in a louder voice. This procedure is continued until a fluid reading rate is established. The student receives very little preliminary instruction and is not corrected at any time. He is told to concentrate on sliding his eyes smoothly across the paper. The key procedure involved in this technique is the movement of the teacher's finger under the spoken words at the same speed as his oral reading.

VI. Finally, a series of techniques referred to as "success oriented experiences leading to reading" (p. 51) is also described. These procedures can be accomplished by inexperienced tutors. It is only necessary that the tutor be able to read.

The steps are broken into three major divisions, each consisting of several parts.

1. Oral Reading--student-selected materials
    - a. Student selects reading material.
    - b. Tutor reads it to him and points to words.
    - c. Tutor records material.
    - d. Student reads with tape while pointing to words.
    - e. Student demonstrates learning, by reading to class, etc., and is rewarded. (Builds positive affect)
    - f. Student records his reading and this recording becomes part of the talking book library used by the class. (This sounds like a great technique for building affect and student self-concept.)
2. Student creates material
    - a. Oral method
        - i. Tells story to tutor.
        - ii. Tutor writes it.
        - iii. Student reads story until mastery is reached.
        - iv. Word cards are made and a word file started.
        - v. Student demonstrates learning (for example, by reading to the class) and is rewarded.
    - b. Written method
        - i. Student writes his own story and only asks tutor for help with problem words, punctuation, etc.
        - ii. Tutor reinforces all student attempts.
        - iii. Student reads story to class and is rewarded.
3. Silent reading of student-selected material with written response
    - a. Student selects material.
    - b. Student reads silently, asking for and receiving help only when needed.
    - c. Student writes about what he has read, and receives help when necessary.

d. Student demonstrates learning to class or small group of other students and is rewarded.

Dr. Suanne D. Roueche of the Program in Community College Education, University of Texas at Austin, has mentioned a technique used during her tenure at El Centro College in Dallas, Texas. Instructors from the various disciplines and members of the college's administration would visit reading classes to give oral book reports. The books chosen were often contemporary fiction and nonfiction of the best seller variety. Dr. Roueche observes that these reports were very effective in increasing interest in reading and providing opportunity for a unique and positive student-teacher-administrator interaction.

Recommendations regarding materials are abundant. Hernandez (1978) has outlined some particularly practical materials:

1. Newspapers--especially articles relating to special student interests, and also newspaper advertisements

2. Applications
    a. employment
    b. car registration
    c. banking/checking accounts
    d. school forms for students' children

3. Directions
    a. for making things (sewing, woodworking, recipes, etc.)
    b. for playing games
    c. for reading maps
    d. for operating machinery or home appliances
    e. packaged food labels
    f. medicine bottles

Others have suggested comics, telephone books, the Bible, cookbooks, catalogs, crossword puzzles, signs, and magazines such as Life, Woman's Day, et cetera (Friedman et al., 1970, p. 46).

Many authors claim that primers in use in adult programs are usually designed for children. The subject matter and content often have no relevance to adult interests, and sometimes the sheer quantity of text is intimidating to illiterates. Harman (Community Fundamental Education, 1974) proposes building reading primers by giving students empty loose-leaf binders and presenting reading lessons as packets that are added to the binders as the course progresses. The technique builds affect since the student is constantly aware of the growing amount of material he has mastered. It is also comforting to know there is nothing in the primer the student cannot read. By designing primer packets dealing with areas of importance to the learners (for example, hygiene or farm machinery), preferred student interests can be accommodated.

Doris Johnson (1976) provides a series of questions which serve as criteria for judging suitability of materials:

(1) What is the nature of the input [the text]?
(2) What is the expected response of the [student]?
(3) What is the nature of the vocabulary?
(4) What is the nature of the sentence structure?
(5) Is the material in keeping with the [student's interests]?
(6) Will the teaching method require deductive or inductive reasoning? (p. 29).

In examining the format of materials, instructors should consider:

(1) print size;

(2) amount of material on page;

(3) story length;

(4) nature of pictures and illustrations (p. 30).

The importance of pictures and illustrations in reading material cannot be undervalued. Fuglesang (1969), for example, found in working with Zambian illiterates that blackout photographs efficiently conveyed visual information to students. He also recommended the use of generally colorful materials for instruction.

Carroll (1977), on the other hand, maintains that since reading comprehension involves languaging and in Carroll's opinion languaging includes decoding, decoding skills should be instructed. Decoding skills include grapheme-phoneme relationships, whole word recognitions, strategies for studying word order and sentence/word groups, and punctuation cues. In addition, he briefly mentions teaching "strategies of sentence and paragraph comprehension" (p. 11).

Two major ideas that govern the field of adult literacy development emerge from the literature review:

(1) Programs should be pragmatic, with specific goals and objectives having meaning for students. Literacy is not to be treated as an end in itself, but must be perceived as a *tool* for gaining access to the socioeconomic mainstream.

(2) Adult learners form a unique clientele with economic and affective needs exclusive to their group. Materials and curricula designed for children or even for adolescents are not suitable for adults. Elementary materials will offer no challenge and may be perceived as insulting. Likewise, programs intended for adolescents may lack the goal specificity and pragmatism demanded by people who are often making enormous sacrifices to attend class.

None of the programs, techniques, or materials mentioned in the literacy development literature appears revolutionary. Successful teaching seems to come from principles long known in education: offer to teach students what they want to know (no easy task in the context of culturally different situations); make a clear statement--in language readily understood--of instructional intent; share this intent with students; help each other mutually to key every activity to it. To put it simply, there is no magic formula for teaching literacy, but by developing culturally sensitive learning environments, one giant step will have been made in the direction of enabling formerly semiliterate adults to expand their scope, their economic base and social status, and their experience--all key requirements for fully conscious living.

Literacy Development--A Research Proposal

In order to develop policy implications for programmatic changes *as well as implications for basic research on a national plane*, the Teaching and Learning/Reading and Language Groups of the National Institute of Education have determined that a need exists to study the community college as an institution for literacy development with special emphasis on the functioning of minority students (U.S. Dept. of HEW, 1978).

Beyond the need for policy implications and concrete recommendations for change based on discoveries of how various actors and subsystems within the institutional context facilitate and/or hinder literacy development, the granting agency is especially concerned that implications be developed for the use of transdisciplinary research in studies of this type. The agency wants to learn what contributions to basic discipline knowledge are possible, what problems can be expected, and how they can be resolved. If it can be demonstrated that multidisciplinary research teams can generate new theory by "checking inference against 'fact'" (Grant, et al., 1979, p. 489) while at the same time providing useful application to practitioners and policy makers, then future research planning that incorporates nontraditional methodologies may be implemented, perhaps as routinely as quantitative research has been conducted in the past. Thus, to satisfy these needs, the National Institute of Education has granted two awards, one to Arizona State University and the other to the authors' institution, The University of Texas at Austin.

Planning the Study at Texas

Target groups and areas of concern have been chosen as a result of Year I research--an exploratory literature review, primarily. Results of that exploration have been synthesized in the preceding pages. An analysis of the literature on research methodology, theory building, and ethnography is on-going and will be published as one of the end-products of the three-year endeavor. An annotated bibliography arranged by subject classification will be another project product.

During the first year, access to the institutional settings was negotiated by the Project Director, Dr. Suanne D. Roueche. College administrators at Austin Community College and Houston Community College System agreed to participate in the study of literacy development in the community college setting.

An Advisory Board, selected for 1) expertise in Mexican-American studies, linguistics, developmental education, administration, ethnomethodological research, sociology, cognitive anthropology, and for 2) ethnic representation of culturally different views, and for 3)community college involvement has proven to be a most useful resource. Responding to requests for suggestions of important research areas and for reactions to preliminary documents describing the research design, these board members provide necessary feedback reflecting divergent views, allowing our staff glimpses of the complexities of the multidisciplinary approach to developing a theory and method of literacy development. Several of the advisors choose to attend some of the weekly staff meetings. The NIE staff at Texas envisions the members of the Advisory Board as serious facilitators of sound decisions as staff members grapple with the problems of a multidisciplinary approach to research and as sounding boards for staff concerns and questions.

The second thrust in Year I's work included the development of a conceptual framework and procedural methodology, and subsequent formulation of a research team. At various times during the year, our team has been composed of a dozen or so individuals with training in diverse disciplines: anthropology, sociology, psychology, linguistics, neurological studies, history, cross-cultural studies, gerontology, bilingual/bicultural education, science education, speech pathology, communication disorders, and philosophy. Our diverse backgrounds have shaped the tone and direction of the research from the inception of the project. The varied perspectives have enriched our view of literacy development, especially as our approach was intended to be nontraditional and distinct from most previous educational research. In addition, these perspectives also help explain the broad, often far-ranging exploration reflected in some of the previous chapters. All of this is not to suggest that the road has been entirely smooth, however!

Differences have emerged especially with reference to major thrusts of the research as well as to more minor issues such as field sites, the meshing of quantitative with qualitative methods, and the timing of such mergers. Suspending biases has been (and will continue to be) the most difficult part of the transdisciplinary process. Some disciplines are oriented toward collective behavior; others toward individual actions, attitudes, motivations, etc. Certain disciplines are naturally prescriptive (e.g., psychology), while others (e.g., social history)attempt to incorporate several levels of events, situations, values, and actors using induction and intuition more frequently than clear-cut independent and dependent variables, cellular separations and so forth, so essential to the "scientific" method. From many planning sessions, differences, strengths, and weaknesses of existing disciplinary approaches to research methodologies finally gave way to ethnographic methods rather than prescription.

Conceptual Framework

All the preceding chapters and the present one in particular have described the complexities of literacy development especially among minority adults. It is this cobweb of complexities that drives and suggests a conceptual framework for studying literacy development based on an interdisciplinary fieldwork approach. No single discipline is equipped with all the tools necessary for understanding the problem of adult illiteracy in this country and how it might be ameliorated within the context of the community college.

While an abundance of reports has been written, indicating that research on literacy development attacks a significant problem, what is needed now is research that cuts through the numbers, the statistics, and the often limited quantitative procedures to reach a VERSTEHEN (German for an intensive, in-depth knowledge). Such an understanding would transcend postulational deductive reasoning on which most quantitative research is based. This new research would begin in the arena of induction and exploratory discovery. It would then be concerned with description, analysis, and interpretation, not with prediction and control. Such research would allow for explanation of a kind impossible to achieve when a researcher is encapsulated by initial formal hypotheses and biases, both of which might inhibit intellectual curiosity, imagination, enthusiasm, and novelty--all ingredients necessary for creative discovery (Austin, 1978).

Assuming that a conceptual framework which allows for creative discovery of theory and method is what the literacy development problem requires for its amelioration, then necessary components and operations for such a framework must be identified.

Methods--General Comments

Compared with research reported in the preceding pages, the research methods proposed in this section are distinctive. They are, first and foremost, open-ended. They are qualitative. They are based on relatively unstructured guidelines for interviewing and observational activities. They require teamwork in the best sense of cooperativeness --where each member of the team not only shares responsibility for high levels of performance but is willing to communicate regularly and openly with other team members and to suspend biases in order that potentially unknown and possibly critical features, issues, and consequences may emerge. These methods also require the interlacing of new findings from current literature with the varied expertise (professinal, ethnic, experiential, and ideological) of all the actors involved--from researchers to college administrators, faculty, counselors, students, and community figures that impinge directly or indirectly on the literacy development scene. And, finally, and importantly, these methods require a *knack for sensing which features and issues to ignore*. Grant (1979) recognized the importance of this characteristic in qualitative research when he distinguished such research from social criticism by maintaining that the essential cooperativeness of qualitative research compels "systematic attention to evidence that does not 'fit'" (p. 489). In other words, tunnel vision, dependent upon the "reaction of a single sensibility to an object of perception or field of inquiry" (*Ibid.*), is strictly *verboten*. At the same time, the temptation to explore broadly must at some point be curbed. Otherwise, the carrying capacity of the creative research team which constantly generates new ideas will overload and no useful opportunities on which to focus or to ground theory can be glinted. Without focus and grounded theory, qualitative research is pointless (Glaser and Strauss, 1967; Megirow,1975; Grant, et al., 1979).

Purposeful Questions, But No Formal Hypotheses

While qualitative research must begin without restrictive hypotheses, it will (and must) begin with questions raised by the preceding literature review and by the needs of the National Institute of Education in its Request for a Proposal (U.S. Dept. of HEW, 1978). The following questions appear to be the most useful in terms of the overall problem and at the same time the most consistent with the scope of work outlined by the National Institute of Education:

1. How do the academic subsystems (transfer courses, vocational/technical programs, developmental/remedial programs, bilingual programs, and counseling activities) of the community college interact to facilitate and/or hinder literacy achievement?

2. Are there significant interactions of students, faculty and staff within and between these subsystems that might aid in understanding literacy achievement and in recommending procedural and policy changes?

3. What are the literacy and numeracy demands involved in successfully negotiating the formal programs, coursework, and administrative tasks of applying for admission, financial aid, counseling, etc.?

4. Which students need literacy development? What cognitive abilities, socialization patterns, and linguistic skills are necessary for performing those tasks?

5. What administrative tasks encountered by non-student actors (faculty, counselors, librarians, other staff members) impinge on student attendance, attrition/persistence, progress, and success?

6. From initial entry to stop-out to exit, what types of counseling information (including tests) and support services can a student expect to encounter? What are the foundations, meanings and imports of this information? Do the tests used in counseling and other settings have content validity for the academic and occupational programs offered by the institution? Does the information require reading to learn something or reading to do something? Is it useful to the student? Are there non-print means of providing students with comparable information? Is the institution providing services needed for literacy development and for negotiating the educational experience?

7. Is the community college the right setting for literacy development? Are ABE programs in neighborhood centers achieving better results according to community perceptions? How do taxpayers feel about basic skill development for adults and in what contexts?

8. How can data be gathered to answer the foregoing questions and simultaneously suggest interpretation that can lead to recommendations for changes and policy statements at the classroom, programmatic, counseling, institutional, community, state, and national levels?

9. What products might be developed for testing, for training, for counselors, for instructors, for students, for use in future research?

10. What are the research implications for basic discipline (or transdiscipline) knowledge growth?

Procedure

Target Population.-- Several groups will be studied:

1. Students -- Minority students are culturally different individuals whose social, economic, and family backgrounds diverge from the Anglo norm. (See Appendix C for the guidelines developed by the NIE staff for determining cultural differences). Majority students will also be included in the research.

2. Staff -- Administrators, faculty, counselors, librarians, custodians, and employees of the institution in general are included in this sample. They will represent both minority and majority groups.

3. Community figures -- Employers, minority leaders, policy-makers, members of the Boards of the two institutions, City Council, and other representatives of the "people" will compose this target group.

4. Researchers -- Our own research staff will be another target group of interest in determining the usefulness of transdisciplinary methods.

Design.-- The present plan calls for a representative sample of 100 students from Austin Community College and 100 students from Houston Community College System to be selected by scores on the Nelson Denny Reading Test, ethnicity, persistence/attrition history, and willingness to participate in interviews or participant observations. For sample purposes, we plan to select 50 remedial (8th grade or below reading level) and 50 nonremedial (12th grade or above reading level). Each of these groups, ideally, will be proportionately divided by sex and ethnicity. Ten percent (five in each group) will be drop-outs to be traced through central administration records. Since the average age at ACC and HCCS is now 29 years of age, age will be reported, though not considered a critical detail.

Those students willing to be interviewed will devote 1 1/2 hours to conversation with ethnically matched interviewers (longer with student approval). (See Appendix E for the proposed interview guide for students). Some students likely will be enrolled in classes already being formally observed by researchers. Others will be those students whom researchers meet in informal settings, e.g. the cafeteria, and who agree to participate in the research. Other students may come from counseling situations, library activities, or indications of willingness to participate derived from student survey responses. Still other students, outside of the sample, will be observed in classroom activities. Such observations will give the research a collective dimension.

Staff members and community figures will represent all ethnic groups and will participate on a voluntary basis. An analysis of documents (written procedures, educational materials, texts, city, state, and national statutes and public policy statements) related to the literacy process will add to our larger understanding of the situational aspects of literacy development.

Qualitative data will evolve from implementation of a general method of comparative analysis for discovery/formulation of grounded theory in conjunction with the technique of "synchronic induction" (Glaser and Strauss, 1967; Megirow, et al., 1975). This method of collecting, coding, and analyzing data relies upon many ethnographic studies and multiple theories for the final generation of substantive, then possibly, formal theories. The intention is to synchronize field observation and analysis to the extent that analysis of exchanged documents could be carried out with good timing arranged for discussion of emerging patterns and implementation of theoretical sampling and theoretical saturation processes. The technique "strains" and "refines" our observations--with results in categories, properties, memos, and retesting of observations--for increased validity, reliability of information.

This method of comparative analysis is understandably time-consuming. Time is consumed in establishing rapport in interview situations and in observational settings, whether they be classroom or extracurricular. Interviews will eventually become more brief as individuals from additional groups are asked to respond to the same questions--questions that have emerged from the core categories.

The method involves a joint collection/coding analysis procedure. Staff personnel involved in classroom observation, for example, will record behaviors occurring in the classroom. Following each observation session, field notes are written and codes are developed for as many categories of analysis as possible. The coding procedure will be refined as categories begin to emerge. As categories are noted, they will be compared with 1) previous instances in 2) same or different comparison groups that have been similarly coded. On-going comparisons will note frequency of incidents. Periodically, researchers will submit their notes to an "analysis team" for interpretation. This team will not be involved with the institution from which the data were taken. As emerging patterns in the experiences of the observers/interviewers are clarified, they will be tested against the experiences of other locations, dependent especially on the cooperation of instructors.

Operational Plan

The plan of action for the remainder of the project will be flexible enough to allow for later experimental testing if such appears appropriate after theory has emerged. In the initial stages of the fieldwork, however, all preconceived notions are shelved to the best of our will power and commitment (in order to exorcise the temptation to confirm our own biases). We expect the data will evolve, most likely, into categories, as explained above. It is these categories, then, which can lead to generating grounded theory. Only at that stage would formally stated hypotheses be tested, and then only if time, resources, and contractual constraints justified such procedures.

Operationally, the research plan is embedded in an overlapping team approach that reflects a matrix of staff skills and investigative purposes which flow from the ten questions enumerated above. Each of the present ten researchers has a primary responsibility for one or more teams; each researcher is chairperson or co-chairperson for at least one area:

1. Organizational Dynamics
2. Student Interviewing
3. Staff (faculty, counselors, etc.) Interviewing
4. Classroom Dynamics
5. Special Programs
6. Community Dynamics
7. Literature Review
8. Data Collection and Implications/Interpretations
9. Products and Access Adjustment
10. Transdisciplinary Coordination

More specifically, each team has several members who also serve on other teams either as members (secondary or tertiary responsibilities) or as chairperson (with primary responsibilities). Each chairperson is responsible for producing interim reports on the activities of the team, field notes if appropriate, transcripts of interviews, interpretation of all the team's efforts in the form of a case study or analysis to be completed after the second semester of Year II, and a final mini-report due at the end of the first semester of Year III. Because the nature of each team differs slightly in some cases (Student Interviewing Team vs. Staff Interviewing Team), and considerably in others (Literature Review Team vs. Classroom Dynamics), activities and products will vary in form and substance. Weekly staff meetings in addition to the several team meetings, however, will provide opportunities for all the researchers to stay abreast of new developments in the other areas. Bibliographic information and support will be provided to researchers via the Literature Review Team, in order to make available new publications pertinent to specific areas of responsibility. Discussions of emerging categories enriched by the cross disciplinary complexion of the group should enhance the implication development aspect of the research as well as furnish a forum for exploring and solving problems surrounding a new kind of research.

One transdisciplinary method our staff has developed for handling decision points, validity of evidence, and relevance of emerging categories involves a group discussion of what we call Core Questions. These Core Questions are applied to emerging issues or loci. This model should enable us to operationalize informal hypotheses and explore ideas concerning literacy development and evidence that would support or refute such ideas.

Many specific (and testable) but sketchy hypotheses or ideas have already emerged from the literature review, previous experience of the researchers in different disciplines, and project, and the still-limited but suggestive data that have been gathered so far. These hypotheses or ideas differ in their degree of generalizability, and in the specific loci of their focuses. (This is not to say that any one idea is expected to provide even a near-complete answer to the research problem). Through this operational model, each locus of research, with associated hypotheses, can be articulated with the research problem.

Some of the loci towards which our questions are oriented are overlapping. The following is a non-exhaustive listing of loci or critical issues identified thus far:

- Personal -- Personnel (sensitivity, competence, etc.)
- Counseling -- (personal, vocational, financial, etc.)
- Testing -- possible cultural bias, etc.
- Remedial/Developmental Programs -- materials, methods, etc.
- Classroom Interaction
- Physical Conditions (noise, crowded conditions, money, etc.)
- Coordination of efforts (accessibility, organizational problems, political aspects)
- Community perception and attitudes (leaders, employers, faceless citizens, etc.)
- Decision-making processes (staff, administrators, professionals, politicans, citizens, students)
- Instructors (competence, sensibility, attitudes)
- Problems in the Framing of the Problem (problems in the definition of the definition of the problem--e.g., attrition)

Core Questions in our model which can be applied to one of the above items are:

1. What might the problem(s) be at this locus? (Specific: from literature review, or already gathered data).

2. What evidence can we seek to support and refute this idea?

3. Can, and how can,this data be gathered?

4. If this idea is refuted, what further questions would you ask?

5. If a hypothesis is supported, what policy changes would be recommended to ameliorate the problem?

6. How would you support this recommendation? (i.e., why do you think it would help?).

Each of these questions should be applied, in detail, either by teams or entire staff, to each locus of research. These loci can be viewed as a loose corcentric model, with the "extremes" being, perhaps, personal attributes on the one hand, and community politics on the other. This does not mean that they are separable. In fact, when some headway has been made on the early hypotheses, higher level hypotheses should be developed. These higher level hypotheses would examine specific influences among and between loci. For example, aspects of the Decision-Making Process may have direct effects on loci such as physical conditions and the content of the Remedial Program among others. The following outline is illustrative of how the Core Questions may be applied to one specific locus, Remedial/Developmental Programs:

Example: Remedial/Developmental Programs

1. What might the problem be at this locus?
    a. culturally biased materials.
    b. application/use of materials
    c. Null hypothesis: that the program itself works for those who participate fully.
2. What evidence can we use to support and refute each (in #1)?
    a. culturally biased materials:
        --evaluation by researcher
        --question various "culturally different" students
    b. application/use of materials.
        --see if materials are used "correctly"
        --see if social interaction would help or hinder
            --observe
            --interview staff and students
    c. Null hypothesis:
        --do students who participate fully, improve?
        --if not, why not? (failure, leave school, etc.)
        --if so, does this exonerate the program?
            (i.e. look at posibility of self-selection).

3. Can/How can data be gathered?
    a. examination of materials
    b. interviews vs. relevant questions?
    c. observations
4. If hypothesis refuted, then what?
   (i.e., if materials are not biased, they are applied correctly and the program works for those who complete it, then what). Look at other loci for possible connections (e.g. recruiting).
5. Policy changes:
   e.g., different materials and why
   e.g., different testing procedures
6. Support this recommendation.

Specific procedures beyond the Core Question model for exploring literacy development involve an amazing array of activities and intricate coordination. The following stream of consciousness list provides a panoramic view of some of the tasks involved:

-- the development of interview guides (for students as well as for the other target groups);

-- the design of data sheet schedules;

-- the development of field note guidelines (including coding classifications and schemes);

-- analysis of documents;

-- observation of administrative tasks and classroom dynamics and guidelines for these activities;

-- analysis of literacy demands of the educational experience in several settings (academic, transfer, vocational/technical, developmental/remedial, bilingual, counseling);

-- historical recounting of the evolution of programs affecting literacy development, including recruitment, preassessment procedures, and content validity analysis of tests, materials, brochures, etc.;

-- scheduling of interviews;

-- arrangement for formal and informal classroom observations;

-- coordination of document analysis with the on-going literature review;

-- creation of criteria for decision points;

-- development of implication forecasting procedures;

-- balancing of emerging issues with the agreed upon product development schedule;

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-- decisions about changes in procedure and when closure should be made on certain aspects of the research and movement toward other aspects that should be undertaken.

All the while, a transdisciplinary perspective must be maintained on the entire operation!

In the interest of serving instructors, curriculum designers, administrators, and future researchers, our NIE staff plans to maintain a careful record of 1) the processes by which methodology decisions are made and of 2) the decisions about research activities. It appears that documentation -- the associates' field notes, tape recordings of staff meetings, personal accounts by the director and associate director of the study's activities during all crucial phases and stages--should well serve to document the thoughtful processes involved in the on-going research (with all of its successes and failures noted for future researchers). In records of the soul-searching, the multidisciplinary-view statements, the thoughtful suspension of long-held beliefs in the most familiar approaches to research, surely future researchers will make further inroads into the literacy development dilemma for the culturally different student. This account of our own struggles with key research issues will be included in our final report at the end of this three-year project.

Such a project requires collective open-mindedness and individually varied talents. Individual members must exhibit intellectual curiosity as well as persistence; willingness to get out of the ivory tower and into the trenches to do fieldwork; congeniality, ego strength, human relations skills in the field and in the intense staff sessions; personal ethics; and ideological and disciplinary detachment (ability to suspend one's biases for the interim).

A challenging maneuver is all of this; yet we are in the process of this very method of research. By 1981, we plan to report a theory and method of literacy acquisition in the minority adult within the context of the community college--an intriguing addition to the annals of educational research!

APPENDIX A

OVERVIEW

By way of overview, and referring to our original proposal to NIE, it seems important to review the achieved goals for Year I and to review the proposed goals for Years II and III.

Achieved Goals for Year I

1. Review of literature on literacy skills development in all settings including anthropological, sociological, psychological, and human factors studies

2. Review of literature on cognitive development with particular emphasis on cross-cultural settings, interactional studies, and theories of methods

3. Review of literature on the nature, scope, and outcomes of developmental studies programs in two- and four-year colleges

4. Development of a conceptual framework, procedural methodology, research design, and project operating plan to be employed in studying the state of literacy development

5. Selection of Advisory Committee composed of individuals whose combined talents represent a respoitory of expertise in multidisciplinary research, bicultural education, literacy development, neurolinguistics, developmental studies programs, and ethnomethodological-type experience whose collective wisdom has enhanced the outcomes of the literature search, outcomes of the dimensions of the implications derived from the literature review

6. Selection of two community colleges that share the enthusiasm for the project, represent the cultural and academic milieu necessary for study, are comprehensive in nature, and are likely to implement the changes necessary to improve the literacy development of culturally different students through the development of an on-going institutional research capability

7. Provision for an in-depth understanding of the supporting sub-systems, administrative procedures, state and local policies, and other components of the organization's setting which impacts culturally different students

8. Provision for a multicultural prospective: the interpretation of wider social goals (global to local) and policy implications from the federal, state, community, and college level that will best serve the needs of the culturally different student

9. Pursuit of a commitment to a program of research that attempts to coalesce theory and practice through vigorous analysis of knowledge and behavior from several divergent disciplines

10. Active pursuit of a diverse and comprehensive plan for dissemination through national, regional, and local programs

Proposed Goals for Year II

1. Implement the Operating Plan approved by the Advisory Committee, cooperating institutions, and NIE (Operating Plan to include field work conducted from August, 1979, through May, 1980)
2. Produce draft of report by mid-August of 1980
3. Revise report as needed, after review by Advisory Board, cooperating institutions, and NIE by August of 1980
4. Produce final copy of Year II requests by September of 1980
5. Produce plan for Year III by September of 1980

Proposed Goals for Year III

1. Develop an integrated system of total program design features, based on the research, that are designed to more effectively serve the needs of the culturally different student
2. Generate new and possibly more profound hypotheses concerning the actual mechanisms involved in the relationships, perceptions, motivations, behaviors, and performance of the culturally different students vis-à-vis the mainstream population and organization's setting
3. Continue to implement operational plan as revised by findings and recommendations from October of 1980 through January of 1981
4. Continue field work from October of 1980 through January of 1981
5. Determine implications of research for language training in the community college
6. Develop conclusions, recommendations that impact study environment by February of 1981
7. Develop conclusions, recommendations for population in general by March of 1981
8. Develop generalizable conclusions and recommendations for NIE's further research by March of 1981
9. Produce draft of final report by April of 1981
10. Involve Advisory Committee's recommendation by May of 1981
11. Produce Executive Summary by June of 1981

12. Produce Technical Report with supporting appendices describing full range of work for three-year period by July of 1981

13. Exchange drafts with Arizona Project by July of 1981

14. Produce (compare-contrast) document by August of 1981

APPENDIX B

EVALUATION PLAN

In order to design an effective methodology for collecting data in Year II, it was necessary to clearly identify aspects of the evaluation plan that would become primary indicators for research activities. Again referring to the original research project proposal, the evaluation approach includes the evaluation of behaviors of individuals in the educational setting that impact on the culturally different student. This approach should evaluate the impact of the total experience on the culturally different student within the educational environment. In effect, the evaluation approach will include a "look-see" (an evaluation) at behaviors--behaviors of the culturally different student and of those individuals who impact his behavior. Three aspects impacting behavior are to be included in the evaluation design of this project: content, attitudes, and performance. Because evaluation will be on-going in the sense that formative evaluation will be collected during each phase of the project and summative decisions will be made at the end of each phase, Figure 1 is included to graphically display the various collection efforts that will be made to support each phase of the program and the kinds of data that will be collected under each of the major objectives of the project.

Again referring to the original proposal, the three aspects impacting behavior are further delineated:

Content

1. Knowledge about the culturally different student, including sociocultural dimensions
2. Knowledge about policies relating to the culturally different student
3. Knowledge about the instructional programs designed for the culturally different student
4. Knowledge about the academic programs in which culturally different students matriculate
5. Knowledge about the instructional program in which culturally different students learn
6. Knowledge about the counseling environment in which culturally different students are placed
7. Knowledge about the impact of language on the culturally different student
8. Knowledge about different cultures that may be present in the instructional environment
9. Knowledge about teaching methodologies used for culturally different students

FIGURE 1
PROJECT DIMENSIONS, METHODS, AND TIME INTERVALS

Time Intervals	Year I Phase I				Year I Phase II					Year II Phase III								Year III Phase IV		
Activities	Advisory Committee	Literature Search	Synthesis	Document	Conceptual Framework	Methodology	Research Design	Operating Plan	Select Environment	Literary Demands	Relationships	Procedures	Policy	Instructional Program	Counseling	Revision Policy	Language Training	Continue Phase II (Revised)	Conclusions Recommendations	Generalized Findings
Collection Areas																				
Literature Review										*	*		*	*	*	*	*			
Literature Analysis										*	*		*	*	*	*	*			
Environmental Search									*	*	*		*	*	*	*	*			
Student Demands										*	*		*	*	*	*	*	Summative Evaluation	→	→
Relationships in Programs											*		*	*	*	*	*			
Policy Study													*	*	*	*	*			
Instruction Program														*	*	*	*			
Collection Methods																				
Surveys										*	*	*	*	*	*		*		→	→
Participant-observation										*	*	*	*	*	*					
Structured Interview										*	*	*	*	*	*					
Tests in Cognitive Processing										*	*			*			*			
Dimensions																				
Content		*	*	*	*	*	*	*		*		*	*	*	*	*	*	*	*	*
Attitudes						*	*	*		*	*		*	*	*	*	*	*	*	*
Performance						*	*	*		*	*		*	*	*	*	*	*	*	*

10. Knowledge about teacher strategies used for culturally different students

Attitude

1. Attitudes of the culturally different student
2. Attitudes of the administration towards the culturally different student
3. Attitudes towards culturally different students manifested by instructors
4. Attitudes about culturally different students manifested by counselors
5. Attitudes about culturally different students manifested by staff
6. Attitudes manifested towards culturally different students by other students
7. Attitudes manifested towards culturally different students by paraprofessionals and student aides
8. Attitudes towards culturally different students manifested by members of the Board of Trustees
9. Attitudes towards culturally different students manifested by family members
10. Attitudes towards culturally different students manifested by their own peer group
11. Attitudes towards culturally different students existing in the local population in general
12. Attitudes towards culturally different students manifested by the power structure and the local government
13. Attitudes towards culturally different students manifested by the state in general

Performance

1. How attitudes of others impact on the culturally different student in terms of hiw own performance and evaluation of the actual performance of the administration towards culturally different students
2. An analysis of the actual performance of counselors towards culturally different students

3. An analysis of the actual performance of instructors towards culturally different students
4. An analysis of the actual performance of the staff towards the culturally different student
5. An analysis of the performance of other students when placed in the same setting with culturally different students
6. The actual performance of professionals and student aides in a work setting of culturally different students

APPENDIX C

Questions to determine cultural difference (of native-born Americans)

1. Occupation of parents when growing up
   (We can set aside lowest 25 percent perhaps)

2. Income of family when growing up
   Income of student now
   Under $10,000; $10,000-$20,000; $20,000-$50,000; over $50,000

3. Education of parents--highest grade completed
   (Perhaps set below high school or high school as guide)

4. Household size (non-nuclear family or very large family)

5. Neighborhood (predominantly Mexican American or black)

6. Prior schools--elementary, junior high and high school
   (Predominant ethnicity, income of students predominantly low)

7. Language used in home if different from "standard"
   (Spanish, black dialect)

8. Accent or dialect different from Anglo norm

9. Appearance non-European

/8 and 9 can be noted by the interviewer./

APPENDIX D

Target Population

We have engaged two community college districts, Austin Community College in Austin, Texas, and Houston Community College System in Houston, Texas, to participate in this pragmatic project. Both college districts are composed of multi-campus configurations; both have academic and vocational programs, as well as developmental studies, bilingual and multicultural activities, and counseling programs. Houston Community College System, serving a large urban area and over 30,000 students, conducts classes in storefront situations, high school buildings, churches, leased facilities, and its own buildings. Austin Community College, on the other hand, serves a population one-tenth the size of HCCS' service area and has several distinct campuses as well as community service functions. Neither has a local tax base, gaining financial support primarily from the State of Texas.

The ethnic breakdown of the student population of these two schools is represented in Figure 2. Target groups will include, primarily, developmental studies students whose race or ancestral language differs from the majority English-speaking white citizen in post-industrial North America. Because this is an experimental ethnomethodological study, however, all the individuals constituting the community contacts, all the formal, informal transactions or interactions which take place during the course of the day, and the larger environmental impact of institutional activity (policies, rules and regulations, procedures) will form part of the target population, including the research or participating in the observations and experiments. Hence, in addition to administrators, counselors, instructors, librarians, work/study personnel, classified staff, custodial staff, and other students, members of the community will also form a peripheral target group.

In the selection of these environments, we considered several factors which we feel will make our end results more generalizable. We wanted an environment which had many features in common with a wide group of colleges. We were looking for fairly large heterogeneous student populations, ethnically, culturally, and linguistically-speaking. Institutional research capability or potential was important to us. Relatively stable administration obviating the possibility of a major dysfunction was also a top priority for us. The organization needed to be of sufficient size so that any samples taken would be sensitive to differences, thus making our results more generalizable. We were especially interested in locating an environment with a comprehensive mission which included academic, vocational, and developmental programs and their offerings, combined with effective counseling models incorporating traditional academic guidance functions with job placement, career counseling, and self-concept development. The question undoubtedly can be raised as to whether or not these two particular institutions best meet our criteria for selection; however, as a result of careful evaluation during Year I and consideration of other important aspects of selection --proximity to researchers, accepting attitude on part of administration, faculty, and staff, etc.--the two institutions mentioned in the original proposal continued to match the designated criteria for selection and are included in the final research design.

FIGURE 2

PERCENTAGES OF ETHNIC GROUPS REPRESENTED IN TWO TEXAS COMMUNITY COLLEGES (SPRING, 1978 FIGURES)

	Houston Community College System	Austin Community College
Anglo	57%	70.45
Black	30%	12.18
Spanish Heritage	8%	13.21
Native American	.3%	.54
Oriental	.7%	.78
Other (includes foreign students)	4%	2.78
Unknown	0	.06
Total	100%	100.00%

Because together Austin Community College and Houston Community College System meet our requirements, we have every reason to feel confident that our findings will be broadly generalizable, not only to other college environments in educational settings, but potentially to other cultural and everyday life cognition situations.

APPENDIX E

Student Interview Questions

Why did you decide to attend college? Why did you decide to attend (ACC/HCCS)?

What did your family/friends think about your going to college?

What do you think of the instructors at (ACC/HCCS)?

What kind of people are (ACC/HCCS) administrators?

Do you receive financial aid from (ACC/HCCS)? Does it meet your financial needs?

Are you familiar with the developmental studies program?

What do you think the purpose of the developmental studies program is?

Do you use the library? Why do you/don't you use it?

Is there a job placement office at (ACC/HCCS)? Has the job placement office been helpful to you or your friends in getting a job?

Is it difficult to apply for financial aid?

Have you ever thought about dropping out of school, and if so, why? Why did you decide to stay in school?

Have you gone to school every semester (since you started)? If not, what happened to keep you from going to school?

Are there counselors at (ACC/HCCS)? What do they do?

Have you seen a counselor?

How did you feel about your visit with him/her?

Have you received tutoring? In what areas? Was it helpful?

What are your educational goals?

Do you plan to get a degree?

How do you see that a degree will help you?

Do you think that you need a degree to get a job?

What kinds of jobs can you get without a degree?

Do you consider college necessary for economic improvement?

Do you consider college a waste of time? a place to get credentials? a place to go to meet people?

How do you get to school?

What do you think of the locations of the different campuses of the (college/system)?

Are you satisfied with what you're getting out of college? What do you think you've learned to date?

What do you like about schools?

What don't you like about schools?

Were you satisfied with the education you received in elementary? junior High? high school?

What was the ethnic mix of the elementary, the junior high and the high school you attended?

Did your elementary school have reading groups? for example, high, medium and low reading groups? What was the proportion of minority students in the different groups? Which groups were you in?

Do you think you were treated any differently because you are (Mexican American, black, etc.)?

Was there a lot of competition in your high school? How did you deal with it?

What do you do in your spare time?

Do you belong to a church or to any organizations?

Do you read the school newspaper? What other kinds of material do you like to read?

What language(s) is/are spoken in your home?

When you were growing up what language(s) was/were spoken in your home? (Did you answer in English to your parents' Spanish?)

What language(s) do you speak? If more than one, in what situations do you use these languages?

How well do you think you speak these languages?

How important is it for you to improve reading, writing, and math skills? (for your job, for self satisfaction, for everyday life)

How well do you think that you can read and write?

What are your hobbies or recreation activities outside school?

Let's try to make an estimate of the number of hours of television you watched in the last week.

What kinds of programs do you watch?

Do you read at all outside of school and homework (what, when, how long)?

Do you ever write anything other than letters? anything outside school and homework?

Do you ever write letters?

Do you ever use mathematics or arithmetic at home or somewhere else outside school?

Do you personally own a dictionary? How often do you use it when you are writing?

Does it mean much to you whether you write and spell according to the rules? Why do you feel that it is/is not important?

Are you presently taking English classes? Were these optional? Why did you choose the(se) course(s)? Why not?

How often do you turn in written work in English classes?

Who in your family immigrated to the United States (you, your parents, etc.)?

Are you responsible for children in your family? Is this child care a problem and does it interfere with your school work? Are you in need of child care?

In what political groups are you active?

Do you belong to any political organizations?

What student groups are involved in politics on this campus?

Who is your representative in student affairs?

Finally, let's talk a little bit about your plans for the future: What is your best (most realistic) guess as to what you will be doing in the first years after you leave college?

Have you made, or will you make any course choices aimed at your plans for work?

With whom have you discussed these choices? How often? What was the advice you received?

Which of these persons do you think influenced you most?

You know that we are interested in the teaching and learning of reading, writing and mathematics skills, and in the way students feel about learning these skills in school, in their own lives, and in their future work. Are there any other comments you would like to make?

Thank you very much for your help.

APPENDIX F

Student Data Sheet

Name and Address

Age

Male or Female

Part-time or full-time student? How many course hours are you retistered for this semester?

How many course hours have you already completed?

Occupation: Job Title:

How many brothers and sisters do you have? What are their ages? Birth order?

Who do you live with?

How long have you lived in (Austin/Houston)?

Where were you born and raised?

What did/do your parents do for a living?

What was the last grade completed by your mother? your father?

How many children do you have? List their ages, grades and/or occupation.

How many semesters have you been enrolled at (ACC/HCCS)? Were these continuous?

Have you attended any other schools beyond high school? (e.g. vocational, business, other college, etc.)

When asked for your ethnicity, what do you report?

Religion:

Program of study:

Occupation of wife/husband: Job Title:

What was the last grade completed by your husband/wife?

High school graduate? GED?

Are you a veteran? If yes, are you using the G.I. Bill?

Do you receive financial aid?

APPENDIX G

Core Questions Guiding the Research

1. What might the problem(s) be at this locus?

2. What evidence can we seek to support and refute this idea?

3. Can and how can this data be gathered?

4. If this idea is refuted, what further questions should we ask?

5. If an assumption is supported, what policy changes would be recommended to ameliorate the problem?

6. How will we support this recommendation?

APPENDIX H

Code Number ____________________

SURVEY OF COMMUNITY COLLEGE ORGANIZATIONAL FUNCTIONING

This questionnaire is part of a study designed in conjunction with your college to learn more about how people work together. The aim is to use the information to make your work situation more satisfying and productive.

If this study is to be helpful, it is important that you answer each question as thoughtfully and frankly as possible. This is not a test and there are no right or wrong answers.

The questionnaires will be processed so that only group results will be reported. No individual responses will be identified.

. . . .

Adapted from the Survey of Organizations. Institute for Social Research, Ann Arbor, Michigan. By: Jerry Snow & Oscar G. Mink, NOVA Research Project, The University of Texas at Austin, 1977.

INSTRUCTIONS

Most questions can be answered by circling one of the answer spaces. If you do not find the exact answer that fits your case, use the one that is closest to it.

Please answer all questions in order.

Remember, the value of the study depends upon your being straightforward in answering this questionnaire. You will not be identified with your answers.

This questionnaire is designed for easy completion and key punching. Questions are answered by circling the appropriate answer spaces as illustrated in this example:

Q. Which is the only mark that will be read properly?

1 = An "X" over the number
2 = A ✓ next to the number
[✓ 3] = A ○ around the number
4 = Other

Definitions: This questionnaire asks about a lot of different aspects of your work. Among these are questions about your supervisor and your department. The questions about your supervisor refer to the person to whom you report directly and the questions about your department refer to all those persons who report to the same supervisor.

1. What is the name of your college? ______________________________

2. In which Division do you work? (e.g. voc/tech, academic, student services)

____

3. In which department or program do you work (e.g. welding, history, counseling)

____

NOTE: Read these answer categories over carefully. Then answer each of the following questions by circling the number of the answer you want to give.

1 = To a very little extent
2 = To a little extent
3 = To some extent
4 = To a great extent
5 = To a very great extent

4. To what extent is this college generally quick to try out new instructional methods? 1 2 3 4 5

5. To what extent is this college using individualized or the systems approach to instruction? 1 2 3 4 5

6. To what extent would you like this college to be using individualized or the systems approach to instruction? 1 2 3 4 5

7. To what extent does this college have a real interest in the welfare and happiness of those who work here? 1 2 3 4 5

8. How much does this college try to improve working conditions? 1 2 3 4 5

9. To what extent does this college have clear-cut, reasonable goals and objectives? 1 2 3 4 5

10. To what extent are work activities sensibly organized in this college? 1 2 3 4 5

11. How adequate for your department is the information it gets about what is going on in other departments? 1 2 3 4 5

12. To what extent does this college tell your department what it needs to know to do its job in the best possible way? 1 2 3 4 5

13. How are differences and disagreements between units or departments handled in this college?

    1. Disagreements are most always avoided, denied, or suppressed.
    2. Disagreements are often avoided, denied, or suppressed.
    3. Sometimes disagreements are accepted and worked through, sometimes they are avoided or suppressed.
    4. Disagreements are usually accepted as necessary and desirable and are worked through.
    5. Disagreements are almost always accepted as necessary and desirable and are worked through.

NOTE: Read these answer categories over carefully. Then answer each of the following questions by circling the number of the answer you want to give.

1 = Very dissatisfied
2 = Somewhat dissatisfied
3 = Neither satisfied nor dissatisfied
4 = Fairly satisfied
5 = Very satisfied

14. All in all, how satisfied are you with the persons in your department? 1 2 3 4 5

15. All in all, how satisfied are you with your supervisor? 1 2 3 4 5

16. All in all, how satisfied are you with your job? 1 2 3 4 5

17. All in all, how satisfied are you with this college? 1 2 3 4 5

18. Considering your skills and the effort you put into the work, how satisfied are you with your pay? 1 2 3 4 5

19. How satisfied do you feel with the progress you have made in this college up to now? 1 2 3 4 5

20. How satisfied do you feel with your chances for getting ahead in this college in the future? 1 2 3 4 5

21. Why do people work hard in this college?

1. Just to keep their positions and avoid being chewed out.
2. To keep their positions and to make money.
3. To keep their positions, make money, and to seek promotions.
4. To keep their positions, make money, seek promotions, and for the satisfaction of a job well done.
5. To keep their positions, make money, seek promotions, do a satisfying job, and because other people in their department expect it.
6. All of the above, and because the students expect it.

NOTE: Read these answer categories over carefully. Then answer each of the following questions by circling the number of the answer you want to give.

1 = To a very little extent
2 = To a little extent
3 = To some extent
4 = To a great extent
5 = To a very great extent

22. To what extent do you enjoy performing the actual day-to-day activities that make up your job? 1 2 3 4 5

23. To what extent are there things about working here (people, policies, or conditions) that encourage you to work hard? 1 2 3 4 5

NOTE: Read these answer categories over carefully. Then answer each of the following questions by circling the number of the answer you want to give.

1 = Little or no influence
2 = Some
3 = Quite a bit
4 = A great deal
5 = A very great deal of influence

IN GENERAL, HOW MUCH SAY OR INFLUENCE DOES EACH OF THE FOLLOWING GROUPS OF PEOPLE HAVE ON WHAT GOES ON IN YOUR DEPARTMENT?

24.	In general, how much say or influence do you have on what goes on in your department?	1	2	3	4	5
25.	Lowest-level supervisors (department chairpersons, supervisors, etc.)?	1	2	3	4	5
26.	Top administration (president, vice presidents, deans of large divisions, etc.)?	1	2	3	4	5
27.	Students?	1	2	3	4	5
28.	Middle administration (division heads, area managers, associate deans, etc.)?	1	2	3	4	5
29.	Staff and faculty (professionals who have no subordinates)?	1	2	3	4	5
30.	Board of Trustees?	1	2	3	4	5
31.	Advisory Boards (representatives from business and industry to your department)?	1	2	3	4	5
32.	Faculty Senate or equivalent?	1	2	3	4	5

33. How are objectives set in this college?

1. Objectives are announced with no opportunity to raise questions or give comments.
2. Objectives are announced and explained, and an opportunity is then given to ask questions.
3. Objectives are drawn up, but are discussed with subordinates and sometimes modified before being issued.
4. Specific alternative objectives are drawn up by supervisors and subordinates are asked to discuss them and indicate the one they think is best.
5. Problems are presented to those persons who are involved, and the objectives felt to be best are then set by the subordinates and the supervisor jointly, by group participation and discussion.

NOTE: Read these answer categories over carefully. Then answer each of the following questions by circling the number of the answer you want to give.

1 = To a very little extent
2 = To a little extent
3 = To some extent
4 = To a great extent
5 = To a very great extent

34. In this college to what extent are decisions made at those levels where the most adequate and accurate information is available? 1 2 3 4 5

35. When decisions are being made, to what extent are the persons affected asked for their ideas? 1 2 3 4 5

36. When decisions are being made, to what extent would you like the persons affected to be asked for their ideas? 1 2 3 4 5

37. People at all levels of a college usually have know-how that could be of use to decision makers. To what extent is information widely shared in this college so that those who make decisions have access to all available know-how? 1 2 3 4 5

38. To what extent do different units or departments plan together and coordinate their efforts? 1 2 3 4 5

39. To what extent would you like different units or departments to plan together and coordinate their efforts? 1 2 3 4 5

PERCEPTIONS OF SUPERVISION:

Please answer questions 40-65 by referring to the person who serves as your supervisor. Supervisor means the person to whom you report directly. For the following set of items, please read each question and with your supervisor in mind answer HOW IT IS NOW, and HOW YOU'D LIKE IT TO BE using the extent scale above.

How friendly and easy to approach is your supervisor?

40. This is how it is now: 1 2 3 4 5
41. This is how I'd like it to be: 1 2 3 4 5

1 = To a very little extent
2 = To a little extent
3 = To some extent
4 = To a great extent
5 = To a very great extent

When you talk with your supervisor, to what extent does he pay attention to what you're saying?

42. This is how it is now: 1 2 3 4 5
43. This is how I'd like it to be: 1 2 3 4 5

To what extent is your supervisor willing to listen to your problems?

44. This is how it is now: 1 2 3 4 5
45. This is how I'd like it to be: 1 2 3 4 5

How much does your supervisor encourage people to give their best effort?

46. This is how it is now: 1 2 3 4 5
47. This is how I'd like it to be: 1 2 3 4 5

To what extent does your supervisor maintain high standards of performance?

48. This is how it is now: 1 2 3 4 5
49. This is how I'd like it to be: 1 2 3 4 5

To what extent does your supervisor show you how to improve your performance?

50. This is how it is now: 1 2 3 4 5
51. This is how I'd like it to be: 1 2 3 4 5

To what extent does your supervisor provide the help you need so that you can schedule what needs to be done ahead of time?

52. This is how it is now: 1 2 3 4 5
53. This is how I'd like it to be: 1 2 3 4 5

To what extent does your supervisor offer new ideas for solving job-related problems?

54. This is how it is now: 1 2 3 4 5
55. This is how I'd like it to be: 1 2 3 4 5

To what extent does your supervisor encourage the persons in your department to work as a team?

56. This is how it is now: 1 2 3 4 5
57. This is how I'd like it to be: 1 2 3 4 5

To what extent does your supervisor encourage people in your department to exchange opinions and ideas?

58. This is how it is now: 1 2 3 4 5
59. This is how I'd like it to be: 1 2 3 4 5

1 = To a very little extent
2 = To a little extent
3 = To some extent
4 = To a great extent
5 = To a very great extent

To what extent does your supervisor encourage people in your department to exchange ideas and opinions with other departments or units in the college?

60. This is how it is now: 1 2 3 4 5
61. This is how I'd like it to be: 1 2 3 4 5

To what extent does your supervisor encourage you to work as a team with members of other departments in assisting students?

62. This is how it is now: 1 2 3 4 5
63. This is how I'd like it to be: 1 2 3 4 5

64. To what extent do you feel your supervisor has confidence and trust in you? 1 2 3 4 5

65. To what extent do you have confidence and trust in your supervisor? 1 2 3 4 5

66. To what extent does your supervisor handle well the technical side of his job--for example, general expertness, knowledge of job, technical skills needed, etc.? 1 2 3 4 5

67. To what extent does your supervisor do a good job of representing your department to other departments? ("Represent" means telling others about what your department has done and can do, as well as explaining the problems facing it and its readiness to do things.) 1 2 3 4 5

IN ORDER TO BE AN EFFECTIVE LEADER, A SUPERVISOR NEEDS CERTAIN KINDS OF INFORMATION, SKILLS, VALUES AND SITUATIONS. TO WHAT EXTENT DOES YOUR SUPERVISOR HAVE EACH OF THE FOLLOWING:

68. Information about how his people see and feel about things? 1 2 3 4 5

69. Knowledge of what it takes to be a good leader? 1 2 3 4 5

70. An attitude which encourages participation and commitment from those who work for him? 1 2 3 4 5

71. Administrative skill? 1 2 3 4 5

72. Skills for getting along with others? 1 2 3 4 5

73. A work situation which allows him to be a good leader? 1 2 3 4 5

74. Interest in and concern for the people who work for/with him or her? 1 2 3 4 5

1 = To a very little extent
2 = To a little extent
3 = To some extent
4 = To a great extent
5 = To a very great extent

WHEN IT IS NECESSARY FOR DECISIONS TO BE MADE THAT AFFECT YOUR DEPARTMENT, TO WHAT EXTENT DOES YOUR SUPERVISOR DO EACH OF THE FOLLOWING BEFORE FINAL DECISIONS ARE MADE?

Provide the members of your department with information about the decisions?

75. This is how it is now: 1 2 3 4 5
76. This is how I'd like it to be: 1 2 3 4 5

Ask for opinions and ideas from members of your department?

77. This is how it is now: 1 2 3 4 5
78. This is how I'd like it to be: 1 2 3 4 5

Meet with his subordinates as a group, present problems that must be solved and work with the group to find solutions?

79. This is how it is now: 1 2 3 4 5
80. This is how I'd like it to be: 1 2 3 4 5

IN ALL THE QUESTIONS BELOW, DEPARTMENT MEANS ALL THOSE PERSONS WHO REPORT TO THE SAME SUPERVISOR.

85. How friendly and easy to approach are the persons in your department? 1 2 3 4 5

86. When you talk with persons in your department, to what extent do they pay attention to what you are saying? 1 2 3 4 5

To what extent are persons in your department willing to listen to your problems?

87. This is how it is now: 1 2 3 4 5
88. This is how I'd like it to be: 1 2 3 4 5

How much do persons in your department encourage each other to give their best effort?

89. This is how it is now: 1 2 3 4 5
90. This is how I'd like it to be: 1 2 3 4 5

To what extent do persons in your department maintain high standards of performance?

91. This is how it is now: 1 2 3 4 5
92. This is how I'd like it to be: 1 2 3 4 5

To what extent do persons in your department help you find ways to do a better job?

93. This is how it is now: 1 2 3 4 5
94. This is how I'd like it to be: 1 2 3 4 5

1 = To a very little extent
2 = To a little extent
3 = To some extent
4 = To a great extent
5 = To a very great extent

To what extent do persons in your department provide the help you need so that you can plan, organize, and schedule what you need to do ahead of time?

95. This is how it is now: 1 2 3 4 5
96. This is how I'd like it to be: 1 2 3 4 5

To what extent do persons in your department offer each other new ideas for solving job-related problems?

97. This is how it is now: 1 2 3 4 5
98. This is how I'd like it to be: 1 2 3 4 5

How much do persons in your department encourage each other to work as a team?

99. This is how it is now: 1 2 3 4 5
100. This is how I'd like it to be: 1 2 3 4 5

How much do persons in your department enphasize a team goal?

101. This is how it is now: 1 2 3 4 5
102. This is how I'd like it to be: 1 2 3 4 5

To what extent do persons in your department exchange opinions and ideas?

103. This is how it is now: 1 2 3 4 5
104. This is how I'd like it to be: 1 2 3 4 5

105. To what extent does your department plan together and coordinate its efforts. 1 2 3 4 5

106. To what extent does your department make good decisions and solve problems well? 1 2 3 4 5

107. To what extent do persons in your department know what their jobs are and know how to do them well? 1 2 3 4 5

108. To what extent is information about important events and situations shared within your department? 1 2 3 4 5

109. To what extent is your department able to respond to unusual demands placed upon it? 1 2 3 4 5

110. To what extent do you have confidence and trust in the persons in your department? 1 2 3 4 5

111. To what extent does your department really want to meet its objectives successfully? 1 2 3 4 5

112. To what extent are the equipment and resources you have to do your work with adequate, efficient, and well maintained? 1 2 3 4 5

1 = To a very little extent
2 = To a little extent
3 = To some extent
4 = To a great extent
5 = To a very great extent

113.	When it comes to doing your job well, to what extent does trying hard make any difference?	1	2	3	4	5
114.	To what extent does doing your job well lead to things like pay increases, bonuses, and promotions?	1	2	3	4	5
115.	To what extent does doing you job well give you a feeling of personal satisfaction?	1	2	3	4	5
116.	To what extent does doing your job well lead to things like recognition and respect from those you work with?	1	2	3	4	5
117.	To what extent does doing your job well lead to things like disapproval and rejection from those you work with?	1	2	3	4	5
118.	To what extent are you clear about what people expect you to do on your job?	1	2	3	4	5
119.	To what extent are there times on your job when one person wants you to do one thing and someone else wants you to do something different?	1	2	3	4	5
120.	To what extent do people expect too much from you?	1	2	3	4	5

TO WHAT EXTENT DOES EACH OF THE FOLLOWING STATEMENTS DESCRIBE THE JOB YOU HAVE NOW?

121.	It gives me the opportunity to find out how well I am doing.	1	2	3	4	5
122.	It lets me do a number of different things.	1	2	3	4	5
123.	It gives me the freedom to do pretty much what I want.	1	2	3	4	5
124.	I can learn new things, learn new skills.	1	2	3	4	5
125.	It provides good chances for getting ahead.	1	2	3	4	5
126.	It uses my skills and abilities--lets me do what I can do best.	1	2	3	4	5
127.	I get endlessly referred from person to person when I need help.	1	2	3	4	5
128.	I have to go through a lot of "red tape" to get things done.	1	2	3	4	5
129.	I get hemmed in by longstanding rules and regulations that no one seems to be able to explain.	1	2	3	4	5

1 = To a very little extent
2 = To a little extent
3 = To some extent
4 = To a great extent
5 = To a very great extent

IN THINKING ABOUT THE KIND OF JOB YOU WOULD LIKE TO HAVE (WHETHER OR NOT YOU HAVE IT NOW), TO WHAT EXTENT IS EACH OF THE FOLLOWING IMPORTANT TO YOU?

130. A job where I can learn new things, learn new skills. 1 2 3 4 5

131. A job with good chances for getting ahead. 1 2 3 4 5

132. A job that uses my skills and abilities -- lets me do what I can do best. 1 2 3 4 5

133. A job that gives me the opportunity to find out how well I am doing. 1 2 3 4 5

134. A job that gives me the freedom to do pretty much what I want. 1 2 3 4 5

* * * * *

135. To what extent is the college you work for effective in getting you to meet its needs and contribute to its effectiveness? 1 2 3 4 5

136. To what extent does the college you work for do a good job of meeting your needs as an individual? 1 2 3 4 5

137. Your sex: 1. Male 2. Female

138. When did you first come to work here?

1. Less than 1 year ago
2. Between 1 and 5 years ago
3. Between 5 and 10 years ago
4. Between 10 and 15 years ago
5. Between 15 and 25 years ago
6. More than 25 years ago

139. Into what age bracket do you fall?

1. 25 years or under
2. 26 years to 30 years
3. 31 years to 35 years
4. 36 years to 40 years
5. 41 years to 45 years
6. 46 years to 55 years
7. 56 years or older

140. How much schooling have you had?

1. Completed high school
2. Some college
3. B.A., B.S.
4. B.A., B.S., plus
5. M.A., M.S.
6. M.A., M.S., plus
7. Ph.D., Ed.D., LL.D.

141. While you were growing up -- say until you were eighteen -- what kind of community did you live in for the most part?

1. Rural area or farm
2. Town or small city
3. Suburban area near large city
4. Large city

142. What position do you presently hold at your college?

1. Faculty
2. Administrative/faculty
3. Administrative
4. Staff (professional serving in a non-supervisory position)
5. Classified (secretarial or clerical)
6. Paraprofessional (serving in a professional capacity without the usual preparation)

143. Is your position:

1. Full time
2. Part time

144. Would you want a member of the project staff to provide a group feedback session to your work group?

1. Yes
2. No

OPINION SURVEY

INSTRUCTIONS:

Below are a number of questions about various topics. They have been collected from different groups of people and represent a variety of opinions. *There are no right or wrong answers to this questionnaire*, we are only interested in your opinions on these questions. Please circle "yes" or "no" for each question below.

1. Do you believe that most problems will solve themselves if you just don't fool with them? YES NO
2. Do you believe that you can stop yourself from catching a cold? YES NO
3. Are some people just born lucky? YES NO
4. Most of the time do you feel that getting good grades meant a great deal to you? YES NO
5. Are you often blamed for things that just aren't your fault? YES NO
6. Do you believe that if somebody studies hard enough he or she can pass any subject? YES NO
7. Do you feel that most of the time it doesn't pay to try hard because things never turn out right anyway? YES NO
8. Do you feel that if things start out well in the morning that it's going to be a good day no matter what you do? YES NO
9. Do you feel that most of the time parents listen to what their children have to say? YES NO
10. Do you believe that wishing can make good things happen? YES NO
11. When you get punished does it usually seem it's for no good reason at all? YES NO
12. Most of the time do you find it hard to change a friend's (mind) opinion? YES NO
13. Do you think that cheering more than luck helps a team to win? YES NO
14. Did you feel that it was nearly impossible to change your parent's mind about anything? YES NO
15. Do you believe that parents should allow children to make most of their own decisions? YES NO

16. Do you feel that when you do something wrong there's very little you can do to make it right? YES NO

17. Do you believe that most people are just born good at sports? YES NO

18. Are most of the other people your age stronger than you are? YES NO

19. Do you feel that one of the best ways to handle most problems is just not to think about them? YES NO

20. Do you feel that you have a lot of choice in deciding who your friends are? YES NO

21. If you find a four leaf clover, do you believe that it might bring you good luck? YES NO

22. Did you often feel that whether or not you did your homework had much to do with what kind of grades you got? YES NO

23. Do you feel that when a person your age is angry at you, there's little you can do to stop him or her? YES NO

24. Have you ever had a good luck charm? YES NO

25. Do you believe that whether or not people like you depends on how you act? YES NO

26. Did your parents usually help you if you asked them to? YES NO

27. Have you felt that when people were angry with you it was usually for no reason at all? YES NO

28. Most of the time, do you feel that you can change what might happen tomorrow by what you do today? YES NO

29. Do you believe that when bad things are going to happen they just are going to happen no matter what you try to do to stop them? YES NO

30. Do you think that people can get their own way if they just keep trying? YES NO

31. Most of the time do you find it useless to try to get your own way at home? YES NO

32. Do you feel that when good things happen they happen because of hard work? YES NO

33. Do you feel that when somebody your age wants to be your enemy there's little you can do to change matters? YES NO

34. Do you feel that it's easy to get friends to do what you want them to do? YES NO

35. Do you usually feel that you have little to say about what you get to eat at home? YES NO

36. Do you feel that when someone doesn't like you there's little you can do about it? YES NO

37. Did you usually feel that it was almost useless to try in school because most other children were just plain smarter than you are? YES NO

38. Are you the kind of person who believes that planning ahead makes things turn out better? YES NO

39. Most of the time, do you feel that you have little to say about what your family decides to do? YES NO

40. Do you think it's better to be smart than to be lucky? YES NO

APPENDIX I

DEVELOPMENTAL STUDIES SELF-ASSESSMENT INSTRUMENT

John E. Roueche | Jerry Snow

DIRECTIONS:

Read these answer categories over carefully. Answer each of the following questions by first circling the number of the answer which best describes how things are. Secondly, answer each of the following by underlining the number which indicates how you would like things to be. Finally, subtract the difference between is and should be.

0 = Not at all
1 = To a very little extent
2 = To a little extent
3 = To some extent
4 = To a great extent
5 = To a very great extent

For example:

		Difference
To what extent does your college provide adequate parking spaces?	0 ① 2 3 4 5	3
	↑ Is ↑ Should be	↑ Difference

DEVELOPMENTAL STUDIES SELF-ASSESSMENT INSTRUMENT

I. CONTEXT

Difference

To what extent has your college:

1. Developed courses which could be classified as remedial or developmental? 0 1 2 3 4 5 ____

2. Developed special services, e.g., tutoring, counseling, financial aids, for those who are academically disadvantaged? 0 1 2 3 4 5 ____

3. Developed a special program for the academically disadvantaged? 0 1 2 3 4 5 ____

4. Developed alternatives other than 1 to 3 for meeting the needs of high-risk students? 0 1 2 3 4 5 ____

5. Implemented an effective open door policy? 0 1 2 3 4 5 ____

CONTEXT: Self-Scoring. Sum of differences ____ ÷ 5 = _____ (Average Difference)

II. PHILOSOPHY

To what extent do you agree that:

1. Ninety percent of all students can learn at a mastery level what you are teaching, if they are given sufficient time and appropriate help. 0 1 2 3 4 5 ____

2. When students believe they can succeed they are more likely to. 0 1 2 3 4 5 ____

3. Teacher expectations of student abilities influence learner behavior. 0 1 2 3 4 5 ____

4. A positive statement of your college's developmental philosophy has been written down and is distributed to students. 0 1 2 3 4 5 ____

5. Developmental education should concentrate on learner acquisition of academic survival skills, e.g., study skills, reading, writing, memory. 0 1 2 3 4 5 ____

II. PHILOSOPHY Continued

							Difference
6. Developmental education should concentrate on the learner acquiring a positive self-concept, e.g., self-esteem, confidence, level of aspiration, motivation, etc.	0	1	2	3	4	5	___
7. Developmental education should concentrate on the acquisition of living skills related to personal and family responsibilities.	0	1	2	3	4	5	___
8. Developmental educators should concentrate on changing the college's response to high-risk learners.	0	1	2	3	4	5	___

PHILOSOPHY Self-Scoring. Sum of differences _____ ÷ 8 = _____ (Average Difference)

III. RECRUITMENT

To what extent does your college:

1. Conduct an assessment of your service areas' educational needs by:							
a. analyzing student demographic data	0	1	2	3	4	5	___
b. utilizing a community needs assessment	0	1	2	3	4	5	___
c. utilizing recruitment/interviewing teams of college volunteers	0	1	2	3	4	5	___
d. community advisory groups	0	1	2	3	4	5	___
e. other ______________________________	0	1	2	3	4	5	___
2. Make an effort to recruit specific target groups who would not normally seek higher education, e.g., persons from lower socioeconomic groups, minorities, handicapped, and the elderly.	0	1	2	3	4	5	___

*3. Which of the following recruitment methods does your college routinely utilize (check as many as apply)	Use Now	Want to Use	Want to Use Now
a. local newspapers	___	___	___
b. mail-outs to high school seniors	___	___	___
c. mail-outs to community households	___	___	___

III. RECRUITMENT Continued	Use Now	Want to Use	Want to Use Now
*3. d. visits to local high schools	____	____	____
e. TV advertisements	____	____	____
f. radio advertisements	____	____	____
g. stands at shopping malls, fairs, airports, etc.	____	____	____
h. visits to local agencies, e.g., church groups, welfare	____	____	____
i. other (please specify)______________ ______________________________	____	____	____

*Results not to be scored.

RECRUITMENT Self-scoring. Sum of differences _____ ÷ 6 = _____ (Average Difference)

IV. ADMISSIONS AND PLACEMENT

1. To what extent is your college able to respond to high-risk students during the registration process?	0	1	2	3	4	5	____
2. To what extent are students advised into programs on the basis of:							
a. a systematic diagnostic-prescriptive-intake process	0	1	2	3	4	5	____
b. testing	0	1	2	3	4	5	____
c. previous educational records	0	1	2	3	4	5	____
d. teacher referral	0	1	2	3	4	5	____
e. self-evaluations	0	1	2	3	4	5	____
f. performance in classes at your college	0	1	2	3	4	5	____
g. other (please specify) ______________ ______________________________	0	1	2	3	4	5	____

IV. ADMISSIONS AND PLACEMENT Continued

Difference

3. To what extent can entering students choose their program of study, i.e., are developmental courses optional or mandatory? 0 1 2 3 4 5 ____

ADMISSIONS AND PLACEMENT Self-scoring. Sum of differences ____ ÷ 3 = ____ (Average Difference)

V. ORGANIZATION OF THE DEVELOPMENTAL STUDIES INSTRUCTIONAL PROGRAM

1. Which one of the following best represents your present developmental studies organizational structure?

____a. The addition of isolated developmental courses in discipline curricula, i.e., adding developmental reading to the list of approved courses in English.

____b. The addition of courses in disciplines which are highly supportive of developmental efforts.

____c. Working with an interdisciplinary group of instructors who remain attached to their disciplines organizationally, but who cooperate with instructors from other disciplines and with counselors attached to these courses.

____d. Establishment of an academic division or department of developmental studies which plans, coordinates and allocates funds for instruction, counseling and other support services.

____e. Establishment of a Learning Resources Center which provides diagnostic assistance and other supportive assistance with academic courses.

____f. Other (please specify) ________________________________

____

2. Given your college setting, rank order the above six structures according to their desirability:

a. ____ b. ____ c. ____ d. ____ e. ____ f. ____

3. Now describe an ideal organizational structure for developmental studies on your campus: ________________________________

____

____

____

V. ORGANIZATION OF THE DEVELOPMENTAL STUDIES INSTRUCTIONAL PROGRAM Continued

		Difference
4. To what extent are your developmental/ remedial courses characterized by:		
a. degree credit	0 1 2 3 4 5	____
b. nondegree credit	0 1 2 3 4 5	____
c. noncredit	0 1 2 3 4 5	____
d. being a full semester in length	0 1 2 3 4 5	____
e. being part of a year-long program	0 1 2 3 4 5	____
5. To what extent are your developmental/ remedial instructional practices characterized by:		
a. use of pretesting	0 1 2 3 4 5	____
b. providing course goals and objectives at the beginning of the term	0 1 2 3 4 5	____
c. providing at least two alternate learning activities for each learning objective	0 1 2 3 4 5	____
d. test items which are developed from course objectives	0 1 2 3 4 5	____
e. revision of course based on learner feedback	0 1 2 3 4 5	____
6. To what extent do high-risk students carry a lighter load than "traditional" students?	0 1 2 3 4 5	____
7. To what extent does your college promote nonpunitive grading, e.g., pass/no pass, late withdrawal without penalty?	0 1 2 3 4 5	____

ORGANIZATION OF THE INSTRUCTIONAL PROGRAM Self-scoring.
Sum of differences _____ ÷ 12 = _____ (Average Difference)

VI. SUPPORT SERVICES

1. To what extent is your learning assistance center affective in assisting students meet course objectives?	0 1 2 3 4 5	____

VI. SUPPORT SERVICES Continued

Difference

2. To what extent does your financial aids office provide students with adequate funds for basic survival? 0 1 2 3 4 5 ____

3. To what extent does your college assist students in finding "college" related work-for-pay? 0 1 2 3 4 5 ____

4. To what extent are the following support services effective in providing you with assistance to work with high-risk students?

   a. Office of staff development 0 1 2 3 4 5 ____

   b. Counseling center 0 1 2 3 4 5 ____

   c. Other college professionals 0 1 2 3 4 5 ____

   d. Media production center 0 1 2 3 4 5 ____

   e. College day care center 0 1 2 3 4 5 ____

   f. Other (please specify)______________ ____________________________ 0 1 2 3 4 5 ____

SUPPORT SERVICES Self-scoring. Sum of differences ÷ 9 = _____ (Average Difference)

VII. STAFFING

1. To what extent are instructors of developmental courses:

   a. volunteers who have chosen the assignment 0 1 2 3 4 5 ____

   b. specially trained in diagnostic procedures 0 1 2 3 4 5 ____

   c. specially trained in instructional techniques which enable them to work with diverse students 0 1 2 3 4 5 ____

   d. specially trained in counseling techniques 0 1 2 3 4 5 ____

   e. evaluated by students 0 1 2 3 4 5 ____

   f. provided any special recognition by the college 0 1 2 3 4 5 ____

VII. STAFFING Continued

							Difference
2. To what extent are faculty at large in your college:							
a. specially trained in diagnostic procedures	0	1	2	3	4	5	___
b. specially trained in instructional techniques which enable them to work with diverse students	0	1	2	3	4	5	___
c. specially trained in counseling techniques	0	1	2	3	4	5	___
d. evaluated by students	0	1	2	3	4	5	___
3. To what extent do counselors work closely with the developmental studies program at your college?	0	1	2	3	4	5	___
4. To what extent are counselors:							
a. selected on the basis of interpersonal competency criteria	0	1	2	3	4	5	___
b. specially trained in developing the potential of disadvantaged students	0	1	2	3	4	5	___
c. consultants in curriculum development	0	1	2	3	4	5	___
d. called upon to assist in conflict resolution between persons in your college	0	1	2	3	4	5	___
e. utilized as consultants throughout the college	0	1	2	3	4	5	___
f. instructors of human development	0	1	2	3	4	5	___
5. To what extent does your college utilize peer tutors?	0	1	2	3	4	5	___
6. To what extent are peer tutors:							
a. selected on the basis of effectiveness-related criteria	0	1	2	3	4	5	___
b. trained in teaching techniques	0	1	2	3	4	5	___
c. trained in counseling techniques	0	1	2	3	4	5	___

VII. STAFFING Continued

Difference

6. d. trained in self-concept development techniques 0 1 2 3 4 5 ____

e. evaluated by students 0 1 2 3 4 5 ____

7. To what extent does your college utilize peer counselors? 0 1 2 3 4 5 ____

8. To what extent are peer counselors

a. selected on the basis of effectiveness-related criteria 0 1 2 3 4 5 ____

b. trained in counseling techniques 0 1 2 3 4 5 ____

c. trained in self-concept development techniques 0 1 2 3 4 5 ____

d. evaluated by students 0 1 2 3 4 5 ____

STAFFING Self-scoring. Sum of differences _____ ÷ 28 = _____ (Average Difference)

VIII. EVALUATION

1. To what extent does your college evaluate developmental studies in a systematic manner? 0 1 2 3 4 5 ____

2. To what extent is your evaluation system characterized by:

a. a guidance feedback system 0 1 2 3 4 5 ____

b. use of pre-post testing 0 1 2 3 4 5 ____

c. use of retention/attrition records 0 1 2 3 4 5 ____

d. use of follow-up data 0 1 2 3 4 5 ____

e. use of student attitudinal measures 0 1 2 3 4 5 ____

f. use of self-concept tests 0 1 2 3 4 5 ____

g. use of control or contrast groups 0 1 2 3 4 5 ____

h. comparison of student achievement to pre-stated program objectives 0 1 2 3 4 5 ____

EVALUATION Self-scoring. Sum of differences _____ ÷ 9 = _____ (Average Difference)

SUMMARY

		Average Difference
I.	CONTEXT	____
II.	PHILOSOPHY	____
III.	RECRUITMENT	____
IV.	ADMISSIONS AND PLACEMENT	____
V.	ORGANIZATION	____
VI.	SUPPORT SERVICES	____
VII.	STAFFING	____
VIII.	EVALUATION	____

APPENDIX J

TABLE I
TEAM MATRIX SEVEN: THE ON-GOING LITERATURE REVIEW

Target Areas	Activity	Core Questions (see Appendix G)
Bilingual Education and Literacy Development		
Developmental Studies and Literacy Development		
Organizational Climate, Communications, Behavior, and Dynamics		
Cross-Cultural Studies in Sociology, Psychology, Anthropology, Economics, Social and Comparative History, Education, Gerontology, and other behavioral sciences as appropriate		
Traditional Sources of Information on Characteristics of Minorities, especially adults, at varying ages, especially related to culture and cognition	Documentary Investigation	*
Studies Dealing with So-Called Disadvantaged Target Groups in Various Institutional Settings		
Cognitive Development from the Overlapping Perspectives of Education, Anthropology, Sociology, Psychology, the Neurosciences, Aesthetics, and Sociobiology		
Alienation from the Perspective of Divergent Disciplines		
Theory-Building		
Theory of Method		
Learning Theory		
Neurolinguistic Programming and Counseling Settings		

TABLE I: Continued
TEAM MATRIX SEVEN: THE ON-GOING LITERATURE REVIEW

Target Areas	Activity	Core Questions (see Appendix G)
Context		
"Scale"		
Problem-Solving		
Comprehension	Documentary Investigation	*
Cognitive Style		
Affect and Motivation		
Culture and Class Overlaps		

TABLE II
TEAM MATRIX SIX: A COMPREHENSIVE FIELD INVESTIGATION OF COMMUNITY, ORGANIZATIONAL, AND CLASSROOM DYNAMICS

I. Community Dynamics

Target Group/Area	Activity	Core Questions (see Appendix G)
State, Federal Documents	Investigation of Documents with Special Implications for Literacy Development	*
City Council	Interviews with Council Members _re_ Literacy Development in Community	*
Austin/Houston Public Library	Interviews with Library Personnel	*
Parents	Interviews: Informal	*
Peers	Interviews: Community Interaction	*
Austin/Houston Citizens (Minority Community)	Interviews: Informal	*
Employers	NIE Staff Interviews	*
Potential Employers	NIE Staff Interviews	*
Institutional Public Relations Office	Reports of "Institutional Image" Surveys	*
Former Community College Students	NIE Staff Interviews Questionnaire: Delivered by Institutional Mailout	*

TABLE III
TEAM MATRICES ONE, THREE, AND FIVE: A COMPREHENSIVE FIELD INVESTIGATION OF COMMUNITY, ORGANIZATIONAL, AND CLASSROOM DYNAMICS

II. Organizational Dynamics

Target Group/Area	Activities	Core Questions (see Appendix G)
All Faculty, Department Chairmen, Administrators	Survey: Community College Organizational Functioning* Survey: Developmental Studies Self-Assessment Instrument**	* *
Board Members	Interviews	*
Administrators	NIE Staff Interviews*** Retrospective Interview	* *
Department Chairmen	NIE Staff Interviews*** Retrospective Interview	* *
Faculty (Developmental, Transfer, Voc-Tech)	NIE Staff Interviews*** Retrospective Interview	* *
Counselors	NIE Staff Interviews*** Retrospective Interview	* *
Staff	Interviews	*
Peer Counselors/Tutors	NIE Staff Interviews***	*
Institutional Documents	Investigation	*
Institutional Services	Financial Aid Sources of Information at Community College Contact with Public Contact with Enrolled Students	* *
Literacy Program	Analysis of Characteristics	*

*See Appendix H

**See Appendix I

***Questions in formulation stage

TABLE IV
TEAM MATRICES THREE AND FOUR: A COMPREHENSIVE FIELD INVESTIGATION OF COMMUNITY, ORGANIZATIONAL, AND CLASSROOM DYNAMICS

	III. Classroom Dynamics	
Target Group/Area	Activities	Core Questions (see Appendix G)
Classroom Materials	Analysis	*
Teacher/Student	Ethnographic Observation with Comparative Analysis	*
Student/Student	Ethnographic Observation with Comparative Analysis	*
Instructional Strategies	Ethnographic Observation with On-going Identification of Concepts	*
Instructors	Interviews: NIE Staff Interviews: Retrospective	* *

TABLE V
TEAM MATRIX TWO: OBSERVATIONAL/EXPERIMENTAL INVESTIGATIONS INTO THE STUDENT REALITY

Student: Observational Investigations

Target Group	Activities	Core Questions (see Appendix G)
Students	Ethnographic Observation: Classroom	*
Students	Ethnographic Observation: Outside Classroom/ Within Community College	*
Students	Surveys: NIE Staff Interviews with Theoretical Sampling and Saturation	*

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